ASEAN ECONOMIC COMMUNITY AND ITS EFFECTS ON UNIVERSITY EDUCATION: A CASE STUDY OF SKILL VERIFICATION BY THE MEANS OF PROFESSIONAL CERTIFICATION EXAMINATION

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ABSTRACT

The objective of this research is to study the implication of AEC on university education system and the job market after its implementation in 2015. This study reveals that lack of unified standard in university education system is the key challenge faced by universities in the AEC. Uniformity in standard is defined as a standard acceptable to all member countries. This study rejects the idea of harmonization of education in the AEC. AEC is a common market comprised of ten member countries. Each country has its own education system, and it embodies the history, culture and the political will of the people. It is rigged with national sentiment and is closely guarded by all state governments; therefore; any attempt of harmonization of education is a failed idea in the AEC. This paper proposes a practical model that establishes a uniform standard in the university education system in the AEC. Such model is based on standardization through professional certification examination by chartered professional associations, such as the ACCA for the accounting profession, CFA for the finance profession, and ICPM for the management profession. The data of this research comes from the quantitative survey conducted among group of students, professors, employees, corporate officers and HR managers from different private universities and business centers in Bangkok. This research proves that professional certification examination establishes uniformity in

the standard; as it verifies the skills of the graduates, despite diversity in the university education system in the AEC. The result is considered significant as $t_r = 2.49$ at 95% confidence level.

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CHAPTER 1

INTRODUCTION

This chapter describes the purpose of the research and provides information about the research. The introduction includes: background, rationale and statement of problem, objective and scope of the study, research question development, and significance of the research.

1.1 Background

Regional integration is defined as a process where countries in a geographic region cooperate with each other to eliminate barriers to regional flow of products, people or capital (Wild & Wild, 2012). These integrations change the landscape of the global marketplace. It opens new market opportunities for companies and service industries. Moreover, it allows domestic companies to seek new markets abroad; it also lets competitors from other nations to enter the domestic market. The ASEAN Economic Community (AEC) is one of such regional integration.

ASEAN is an organization of ten member countries in Southeast Asia. It was established on the 8th of August, 1967 by Indonesia, Malaysia, Philippines, Singapore, and Thailand (ASEAN Secretariat, 1967). Since then, the membership has expanded; currently it includes 5 additional member countries, namely Brunei, Myanmar, Cambodia, Laos, and Vietnam (ASEAN Secretariat, 2008b). The objectives of ASEAN are to accelerate economic growth, social progress, protection of regional peace and stability, and cultural development among its member countries (ASEAN Secretariat, 1967).

The main emphasis of the ASEAN has been regional cooperation for mutual benefits of all member countries. In order to obtain this regional cooperation and capitalize on the economic and socio-cultural amalgamation, leaders of ASEAN, at the 12th ASEAN Summit in Cebu in January 2007, decided to implement the ASEAN Economic Community (AEC) by 2015. The objective of AEC is to transform the ASEAN into a region with free movement of goods, services, investment, skilled labor, and freer flow of capital (ASEAN Secretariat, 2008a). AEC is a challenging step in economic reform. It produces challenges and opportunities for the ASEAN member countries.

Education is one of many industries that will be affected by the AEC. Educational institutions are incorporated as a non-profit organization; however, the earnings of these institutions make significant contribution to the country's economy. Universities finance like normal businesses, deals with profit and loss, balance sheet, and cash flow statement (Louangrath, 2013b) . Revenue of a university depends on enrollment. Therefore, education is an industry and deserves to be analyzed as an economic sector like any other service industries.

Education underpins the development of ASEAN Economic Community. Education is the key factor that will help create knowledge - based society and will contribute to the overall enhancement of the AEC (ASEAN Secretariat, 2014). Education is a tool to raise awareness of the AEC and create the sense of understanding of the richness of ASEAN history, languages, culture and common values.

In this regard, the leaders of ASEAN focus on enhancing regional cooperation in the education sector. As a collective entity to enhance regional cooperation in

education, the ASEAN Education Ministers of member countries identified four priorities that would address ASEAN cooperation on education, namely: (i) Promoting ASEAN Awareness among ASEAN citizens, particularly youth; (ii) Strengthening ASEAN identity through education; (iii) Building ASEAN human resources in the field of education; and (iv) Strengthening ASEAN University Networking (ASEAN Secretariat, 2008a).

1.2 Rationale and Problem Statement

The implementation of AEC in 2015 will significantly increase intra - regional flow of people (workforce, tourists, graduates, and students) in ASEAN countries. The issue with the intra - regional movement of university graduates among the ASEAN countries is that there is a lack of common standard to assess the skills of these graduates. For instance, graduates from Thailand may have opportunity to work in other ASEAN member countries and similarly graduates from other ASEAN countries may have opportunity to work in Thailand. However, the education systems among the ASEAN countries are different from one another. Each university in ASEAN follows its national education system as specified by its Ministry of Education. Diversity in the ASEAN education system poses challenge to the AEC job market. It would be challenging for the market to assess the skills of graduates from different ASEAN countries.

A common standard to measure the skills of graduates is missing. It would be impossible for the market to determine whether a graduate possesses employable skills. Employable skills can be defined as job specific skills or competencies that a person develops through education, training, work experience, interests and extra-

curricular activities (RMIT Career Development and Employment, 2014). These skills are the skills that will equip the employee to carry out their role to the best of their ability.

In the AEC, the claim of skills by the means of university diploma would no longer be adequate because there will be diplomas from ten different countries, each with their own curricular structure and standards. Therefore, it is anticipated that the AEC labor market will demand for employable skills that are verifiable by an independent international body. Verifiable skills are the skills that can be attested under internationally recognizable standard, such as professional certification or designation. Graduates with verifiable skills will have more opportunities than the ones without verifiable skills (McCarthy, 2013). This demand will force universities in ASEAN, to implement a common standard of skill verification.

Harmonization of the education system in the ASEAN countries is not practicable. Harmonization refers to the development of a common education system among the member countries. It means that each country must follow one form of curricular prescription (Louangrath, 2013b). It is not practicable since each member country is developed through a unique historical path and posses a different cultural sentiment and none of them would be willing to give up their present educational system and adopt a new system (Louangrath, 2013b). Therefore, a more practicable approach is the implementation of a uniform standard accepted by the member countries and is recognized globally. “Recognition refers to the acceptance of a foreign certificate, diploma or degree of higher education as a valid credential by the competent authorities and the granting to its holder the same rights enjoyed by

person who possess a national qualification for which the foreign one is assessed as comparable" (Ruiz & Sabio, 2012).

This anticipated change is driven by the market, forcing universities, especially private universities in ASEAN countries, to change its mode of operation (Louangrath, 2013b). Competition in education industry would no longer be confined to one country. Students will choose to study in a productive university that will prepare them for the AEC job market. Productivity is a measure of output relative to input. According to (Jonker & Hicks, 2014) university productivity is a measure of graduates relative to the labor market absorption. Students would choose to study in universities that are accredited by an international body, and whose curriculum aims at imparting verifiable skills to prepare students for the work life.

Accreditation refers to a system of evaluation or assurance of the quality of university education by the external bodies or agencies recognized globally (Vlasceanu, Grunberg, & Parlea, 2007). AEC education market poses challenges and opportunities to the universities, especially private universities in the ASEAN countries. This study focuses on studying how private universities will cope with these challenges and implement a uniform standard into their curricula and attract local and foreign students from member countries.

1.3 Objectives and Scope of Research

One of the objectives of the AEC, as stipulated on Article 1 Paragraph 10 of the ASEAN Charter, is to develop human resources through closer cooperation in education and lifelong learning, for the empowerment of the people of ASEAN and for the strengthening of the ASEAN Community (ASEAN Secretariat, 2008a). The

objective of this research is to investigate how private universities, charged to produce skilled labor force, can contribute in the development of the ASEAN human resource and strengthen the community. A further purpose of this research is to study how private universities will cope with the challenge of skill verification of graduates after the implementation of AEC.

This paper provides a model for the private universities to operate in the AEC market. Internationalization (Louangrath, 2013b) is the proposed model for private universities to operate in the post AEC era. Internationalization is defined as a policy tool comprising of two components (1) the attainment of international standard through accreditation of universities by international body (2) the independent verification of the skills of the graduates by the means of standardized examinations (Louangrath, 2013b). The scope of this paper is limited to the second element of the internationalization i.e. verification of the skills of the graduates in specific fields of study such as accounting, finance and business management by the means of standardized professional examinations.

The research focuses on these three fields of study because these are the key professions that will be affected by the AEC market. With the implementation of AEC, universities will be forced to internationalize their curricular structure. The proposed model is based on market mechanism: a model dictated by the market, skills verification through an international standardized examination.

The scope of this research is limited to the study of private universities because private universities are profit oriented businesses (Kamenetz, 2005). They rely on tuition fees to produce revenue. The researcher uses private universities in Thailand as a case study.

The AEC market is driven by competition. The competition is governed by market mechanism and market mechanism is determined by an international standard. Thai private universities could gain competitive advantage over other private universities by anticipating the AEC market demand and preparing themselves to meet such demand. Private universities anticipating the demand of the AEC market and implementing international standard in their curriculum by the means of professional certification examination system can differentiate themselves in the new market.

Under certification model, verifiable skills are produced based on the professional certification examination administered by the international trade organizations in each field. For example, accounting graduates may be certified through the ACCA or CPA examination. Similarly, finance graduates may be certified by the CFA or CFP institute. And management graduates may be certified through ICPM examination system. Implementation of such standards based on professional certification or designation CBOK (Candidate Body of Knowledge) will attract Thai students and foreign students from ASEAN countries.

1.4 Research Questions

The research questions of this study include:

1. Is there uniformity in the university education system among the ASEAN countries?
2. How can universities implement a uniform standard in the university curriculum that would be accepted among the ASEAN countries?

3. Would implementation of a uniform standard in the university curriculum help market to measure the skill set and technical abilities of graduates?

Uniform standard is defined as a standard or the benchmark set by the market to measure the skills set, and knowledge of the graduates by the means of international standardized examination system recognized globally.

1.5 Significance of the Research

This study determines that after the implementation of AEC in 2015, private universities would no longer be training the labor force for the local job market rather universities would be training the labor force to meet the demand of the AEC market. This study also signifies that with the implementation of AEC, the success of the private universities would no longer depend on the number of degree programs it offers but rather depend on the integration of the graduates into the AEC labor market. This study provides a model for the private universities in ASEAN to operate in the post AEC era.

This study posits that a unified standard in university education is a key challenge faced by universities in AEC. The study postulates that there is no uniform standard in university education system in the ASEAN countries. Uniformity in standard is defined as an international standard acceptable to all member countries (Louangrath, 2013a). This study anticipates that the AEC labor market will force universities, especially in the private sector, to internationalize their curricular structure.

Moreover, this study determines that the concept of harmonization in the ASEAN education system is an impracticable idea. Since each country has its own

post secondary education and no country will give up its system, a neutral system must be adopted. The adoption of the new system will be accomplished through market mechanism, not through state sponsorship. This neutral system must be based on certification examination administered by international professional organizations in relevant fields of studies.

For example, accounting studies will be certified through ACCA or CPA examination system, finance studies will be certified through CFA examination system and management studies will be certified through CPM examination system. This study determines that under certification model, graduates will possess employable skills that are verifiable by an international body whose charter is charged with the duty to define and regulate professional standards in specific occupational fields such as accounting, finance and management (Louangrath, 2013b).

This research shows that the AEC will create market potential for any private universities in the ASEAN that adopts professional certification model recognized globally. This is because competition in AEC is driven by the market. And demand of the AEC market is a labor force with employable skills. Employable skills are verified by the means of professional certification examination. Universities understanding demand of the new market and its will have advantage over rival universities. The researcher investigates whether Thai universities could gain competitive advantage over other ASEAN universities if they adopt such certification model. At present, universities in Singapore have systematically applied certification model into their curricular structure (Louangrath, 2013a). Moreover, Vietnam and Myanmar are also gravitating towards such certification model.

CHAPTER 2

LITERATURE REVIEW

The review of literature for this research focuses on the understanding of the university education system of the ASEAN countries and how it would be affected by the implementation of AEC in 2015. Private university education in Thailand is used as an illustrative case. The literature review summarizes the following five points.

1. The development and improvement of the university education system in the ASEAN countries in light of AEC implementation in 2015
2. The effects of harmonization of education system among the ASEAN countries
3. Mutual Recognition Agreement among ASEAN countries
4. The alternative solution to the harmonization of the education system among ASEAN countries, i.e. standardization via the implementation of internationally recognized certification examination
5. Effects of AEC implementation on Thai private universities

2.1 Related Literature and Previous Studies

Human capital theory explains the importance of education in the economy (Fisher, 1897). It states that skilled labor force is a key element that determines success or failure of an economy (Fisher, 1897). Education is one of the key factors that shape the economy of a country because quality education produces graduates who are responsible for the enhancement of the national economy (Hanushek & Woessmann, 2008; OECD, 2012). Education enables people to develop technical

skills. These skills in the long run enable people to find employment (Welch, 1970). A well educated person will attract highly paid employment opportunity. Moreover, individual earnings are directly related to educational attainment (Hill, Hoffman, & Rex, 2005). Education has a relationship with skills and employment opportunity.

Globalization has reshaped the higher education system around the world. It has led to an increase in mobility of people, programs and institutions across national borders (Hoosen, Butcher, & Njenga, 2009). Education system around the world has been changing to fulfill the new training demands of globalization (IIEP Newsletter, 1998). Several new programs have been established to fulfill the demand of changing workplace, which includes short courses, diploma courses, and distance learning programs (UNESCO, 2005).

The rise in the internationalization and globalization of higher education, in particular the rapid development of cross border higher education, has underlined an urgent need to establish robust frameworks for quality assurance and the recognition of qualifications (International Bureau of Education, 2011).With the introduction of regionalism the challenges for the higher education institutions go beyond the concept of globalization (Hoosen et al., 2009). The main concern is how higher education institutions and the national governments of the regional member countries can adjust themselves to cope with regionalized education.

The portability of qualifications in higher education is one of the major issues associated with such regional integrations (Hoosen et al., 2009). AEC poses similar challenge to the higher educational institutions in the ASEAN. The education system in the ASEAN countries is diverse; therefore, students involved in the intra - regional movement may face many problems in terms of cultural diversity, language and

communication barrier, instructional practices and curriculum incomparability (Iskandar, 2009).

2.2 Development of Higher Education in the ASEAN

"Education lies at the core of AEC's development process, creating knowledge - based society and contributing to the enhancement of ASEAN competitiveness" (ASEAN Secretariat, 2014). National government of each member country understands that education underpins the development of the AEC; higher education is valuable for individual and beneficial to the economy. Therefore, each government has taken key steps in the development of their higher educational policies.

Table 2.1: Development of Higher Education Policies in ASEAN

Countries	Policies	Objectives
Brunei	The 21st Century National Education System (SPN 21) - 2012	1. Equip students with necessary skills and knowledge that is necessary for them to compete at both local and international job market. 2. Gear nation towards quality education and better economic performance.

(Continued)

Table 2.1 (Continued): Development of Higher Education Policies in ASEAN

Cambodia	Educational Strategic Plan (2006 -2010)	1. Increase opportunities of higher education among prioritized students (poor students, female students, students from remote area). 2. Improve quality and efficiency of education service and institutional development and capacity building.
Indonesia	Higher Education Long Term Strategy (2003 – 2010)	1. Integrate internal and external quality assurance by developing HEI database 2. Implement new paradigm in education management and quality improvement.
Laos	Higher Education and Skills for Growth in Lao PDR - 2012	1. Improve quality of higher education. 2. Improve functional skills among students that are required to be employable in the future. 3. Prioritize underfunded fields such as science and engineering.

(Continued)

Table 2.1 (Continued): Development of Higher Education Policies in ASEAN

Malaysia	National Education Strategic Plan (NHESP - 2020)	1. Make Malaysia a “hub of higher education excellence” 2. Develop human capital with first class mentality 3. Reposition country’s higher education to meet current and future challenges.
Myanmar	Long Term Education Development Plan (2001 – 2030)	1. Generate a learning society capable of facing the challenges of the knowledge based society. 2. Development of human resource, expansion of research, promotion of quality education, and preservation of national identity and values.
Philippines	Long Term Development Plan (2010 – 2020)	1. Broaden the access of disadvantaged groups to higher education. 2. Improve quality of HEIs, programs and graduates to match the demands of domestic and global markets. 3. Strengthen research activities in HEIs 4. Expand alternative learning systems/modality in higher education.

(Continued)

Table 2.1 (Continued): Development of Higher Education Policies in ASEAN

Singapore	21st Century competencies in academic curriculum (2012 – 2014)	1. Prepare students to thrive in a fast changing and highly connected world. 2. Develop civic literacy, global awareness, cross cultural skills, critical and inventive thinking and communication skills. 3. Refine teaching approaches and assessment methods. 4. Develop tools for holistic feedback and assessment.
Thailand	Long Term Higher Education Plan – Phase 2 (2008 – 2022)	1. Focus on education ethics. 2. Focus on linking education with employability. 3. Development of Thailand as a regional hub for higher education. 4. Innovation to improve national competitiveness. 5. Liberalization of trade in education services and the future employment in AEC. 6. Encourage educational institutions to produce graduates of international quality who are equipped with professional skills, language skills and inter – cultural skills.

(Continued)

Table 2.1 (Continued): Development of Higher Education Policies in ASEAN

Vietnam	Education Development Strategy (2008 – 2020)	1. Develop high quality human resource to match the socio economic structure and modernization of country 2. Enhance national competitiveness in the regional economic integration. 3. Focus on linking educational training with job placement and demands of employability.

Source: ASEAN Secretariat. (2014). *ASEAN education ministers meeting*. Retrieved from www.asean.org

Brunei, Cambodia, Indonesia and Laos plan to prepare their students to face the challenges of the globalization by equipping students with necessary skills required to be employed in the future. These countries focus on quality improvement of higher education, and plan to increase opportunities of higher education among prioritized students (poor students, female students, students from remote area, and outstanding students) by 2012 (Ministry of Education Youth and Sport, 2010). Myanmar's tertiary education system remains rudimentary, after more than a decade of hiatus(Louangrath, 2013b). Post secondary education in Myanmar is not systematically regulated (Id.) However, as a result of the opening of Myanmar; it focuses on the development of its human resource by promoting quality education in the country.

Singapore aspires to prepare students for the future challenges of globalization (Ministry of Education Singapore, 2014). It wants to nurture in students the

willingness to think in new ways, solve problems and create new opportunities for the future (International Bureau of Education, 2011). It believes that molding the future of the nation depends on students who determine the future of the nation. Therefore, it plans to develop its human capital by developing cross - cultural skills, critical and inventive thinking and communication skills among its students (Id., p.7). It also plans to develop its education curriculum by 2014. Education curriculum is defined as the planned courses of study, content of courses (syllabus), methods and strategies employed to deliver the content, and the assessment methods (Id., p.4).

Malaysia, Philippines, Thailand and Vietnam have established long term educational policies to develop their higher education. These countries focus on preparing their students to succeed in the upcoming regional integration. Success of the students is measured on the basis of the AEC labor market absorption. Malaysia and Thailand focus on becoming regional educational hub for higher education in the AEC (Muda, 2008 ; Office of the Higher Education Commission, 2011). However, the vision of education development of these countries is eight years into the future; AEC is due to arrive in two years. These countries must understand that AEC creates a new market. This new market is bigger than their local market. This new market brings opportunities and challenges to the AEC education industry. In order to succeed in the new market, these countries must anticipate the demand of the new market and prepare themselves to fulfill such demand.

Even though national governments of ASEAN countries are focused on the development of their higher educational standards, it is very difficult for the individual member country to do so without regional cooperation and harmonization efforts (Yavaprabhas, 2009).

2.3 Harmonization of Education in the ASEAN

Harmonization in the ASEAN higher education system is the establishment of a mutually accepted roadmap that provides an agreed set of infrastructure among member countries to facilitate the mobility of students and staff, compatibility in the academic cycles, quality guarantee, credit transfer system, and the system of a common degree cycle or a regional qualification framework (Yavaprabhas, 2009).

Yavaprabhas's idea of harmonization leads towards the path of the Asian version of the Bologna Declaration. The Bologna Declaration is a European model of higher education, established with a motive of developing a common education standard in European Higher Education proposed in 1999 as a Bologna Process (The European Higher Education Area, 1999). Under this declaration, students and graduates could move freely between member countries, and could use the degree from one member country to study further in another member country. Every two years after signing the Bologna Declaration, the European ministers in charge of higher education, met in Prague (2001), Berlin (2003), Bergen (2005), London (2007), Leuven/Louvain-La-Neuve , Belgium (April 2009), Budapest and Vienna (2010) and Bucharest (April 2012) to review the progress and to set directions for the coming years of the progress.

Even though, the Bologna Declaration stands as a most advanced forms of harmonization in the university education system, there are numerous criticisms of the Declaration (Hoosen, 2009). It has been 14 years since the establishment of the Declaration and it is still in process. The Declaration is to be achieved by 2020, twenty one years from its establishment. It cannot be said that the European model is effective worthy of emulation. In face of the fiscal fiasco, it remains to be seen

whether education will follow suit. Degree structure among countries remains different. In certain specialized subjects, prerequisite knowledge can be specific where an advanced course depends on understanding of a prerequisite course, and therefore, early curricula that are not standardized internationally create a barrier to achieving the Bologna objectives (Sedgwick, 2003). Despite the slowness and ineffectual result of the EU education unification, the Bologna Protocol regime boasts 47 member countries. However, the more members there are in a group, there is more degree of freedom or the higher probability of disagreement (variance), and, therefore, the less there will be the probability of successful harmonization (Louangrath, 2013b).

It is likely that AEC will not follow the Bologna Declaration: European Model of Higher Education, because the ASEAN Economic Community is an economic and cultural integration unlike the European Union which is a combination of economic and political integration. Education is part of the AEC's cultural element. It is not likely that any one country would become a dominant model or would be willing to give up their current educational model. Each country in the ASEAN has developed through a unique historical path, and possess rich and diverse cultural portfolio. Education instills nationalism, citizenship values, and cultural identity of a country into its youths (Chia, 2012). It inculcates national consciousness that fosters mutual understanding among the citizens of a country (Puteh, 2010). It is a national mandate for all nations in the world. At the university level, the post-secondary institution is charged with the duty to produce graduates with the ideals and skills fit for the advancement of its nation and economy (Louangrath, 2013b). Education is the embodiment of the country's and people national agenda (Id.) It is rigged with national sentiment and is closely guarded by all state governments; therefore, any

attempt for harmonization of education in the AEC is a failed idea" (Id. p.18). The prospect of success of harmonization has been calculated using a quantitative model, and under such model, the probability that disagreement will ensue in a group comprised of ten diverse countries is as much as 55%. (Louangrath, 2013a). Therefore, this study rejects the idea of harmonization of education in the AEC.

An alternative solution to harmonization has been proposed in this paper called internationalization. "Internationalization is a policy for mobilizing universities to adopt a policy that would result in international recognition through the implementation of work process that meets international standards, and the creation of post-output impact that is verifiable among graduates produced by means of professional certification or designation"(Louangrath, 2013b). The professional certification goes beyond the concept of ASEAN Mutual Recognition Agreement (MRA).

2.4 Mutual Recognition Agreement (MRA)

ASEAN nations have signed mutual recognition agreement (MRA) to enhance the free flow of skilled labor force in the AEC. Under this agreement, each ASEAN member country recognizes the educational certificates and degrees, length of experience, and other qualifications that comply with the MRA specifications, such that a license or a certificate will be issued to the skilled labor force to work freely in the region. As of present, the agreement has been commenced for seven groups of professional groups in the ASEAN. These professional groups are Engineering Services, Architectural Services, Surveying Qualifications, Medical Practitioners, Dental Practitioners, Nursing Services and Accountancy Services. Under the mutual

recognition agreement these seven professional groups will be recognized in the ASEAN and these professional can work freely in the region. The table below shows the specified professions and the year the professions were signed to be mutually recognized.

Table 2.2: Signing of MRA Agreement in 7 Professional Fields

Mutual Recognition Arrangement - Professions	Year of Signing
1. Engineering services	2005
2. Nursing services	2006
3. Architectural services	2007
4. Surveying qualifications	2007
5. Medical practitioners	2008
6. Dental practitioners	2008
7. Accountancy services	2008

After the implementation of AEC, skilled labor force from different professional groups will be moving from one member country to other. The free movement of skilled labor will not be confined to the seven professional groups mentioned above. However, mutual recognition agreement does not recognize other professions other than the aforementioned groups. This research seeks to address the weakness of MRA, as it aims to study the challenges faced by other professional groups that does not fall within MRA.

2.5 Professional Certification Examination

The weakness is addressed by emphasizing on the implementation of professional certification examination. Professional certification refers to an occupational designation that provides confirmation of an individual's competency in a specified profession or occupational specialty (Halligan, 2013). "Professional certification is a process in which a person proves that he or she has the knowledge, experience, and skills to perform a specific job. The proof comes in the form of a certificate earned by passing an exam that is accredited by an organization or association that monitors and upholds prescribed standards for the particular industry involved" (Peterson, 2013). Professional certification assures the employers, customers, and the public that the certificate holder is competent and professional in performing the specified job (Miller, 2014).

Professional certification provides a graduate better employment and advancement opportunities because it proves the graduate is well trained in the specific profession (Heathfield, 2014). Certification increases the credibility, marketability, and professional status of a graduate (Halligan, 2013). Moreover, the graduate possesses competitive advantage over other graduates without certification and is entitled to higher wages and benefits (Peterson, 2013). This paper claims that graduates can substantiate their skills by the means of professional certification and it provides them better employment opportunity, is consistent with Peterson's assessment.

Just as in the ASEAN, the United States has diverse educational policies depending on different states. Universities in every state have its own rules, regulations and fees. Credential recognition varies widely depending on the

professions. Therefore, in order to maintain uniformity, the standard established to enter most of the professions is based on the certification examination system regulated by an independent body (Rabben, 2013). The table below shows the list of areas that offer professional certification and the institutes that confer certification to the graduates. The professional groups studied in this research are accounting, finance, business management, hospitality and tourism, insurance and risk management, and project management. The researcher has chosen to study these majors as these majors are the key curricula of the universities that will become the revenue produce for the universities.

Table 2.3: List of Areas of Professional Certification Examination

Areas of Certification	Professional Certification	Conferring Institute
Accounting	AACA - Chartered Accountants	Institute of Chartered Accountants, Great Britain
	CPA - Certified Public Accountants	State Accountancy Board, USA
	CMA – Certified Management Accountant	Institute of Management Accountants (IMA in the US)

(Continued)

Table 2.3 (Continued): List of Areas of Professional Certification Examination

Finance / Investment	CFA – Chartered Financial Analyst	CFA Institute, USA
	CVA – Certified Valuation Analyst	Association of Certified International Investment Analyst
	PRM – Professional Risk Manager	Professional Risk Managers' International Association
Business Management	CCBA – Certification of competency in Business Analysis	
	CPE – Certified Practitioner Entrepreneur (CPE)	International Entrepreneurs Association, UK

(Continued)

Table 2.3 (Continued): List of Areas of Professional Certification Examination

Hospitality and Tourism	CHA – Certified Hotel Administrator	American Hotel and Lodging Association
	CRDE – Certified Room Division Executive	American Hotel & Lodging Association
	CHE – Certified Hotel Educator	American Hotel & Lodging Association
	CHSE – Certified Hospitality Sales Executive	Hospitality Sales and Marketing International
	CIH – Certified Industrial Hygienist	American Board of Industrial Hygiene
Insurance and Risk Management	ARM – Associate in Risk Management	American Institute for Chartered Property Casualty Underwriters
	CRM – Certified Risk Manager	National Alliance for Insurance Education and Research

(Continued)

Table 2.3 (Continued): List of Areas of Professional Certification Examination

Project Management	PMP – Project Management Professional	Project Management Institute
	SCPM – Stanford Certified Project Manager	Stanford University, USA
	CPM – Certified Project Management	American International Institute, USA

With the implementation of AEC, graduates can move freely within the member countries. However, the education system of each member country is different from one another. Each country has its own national educational training requisites specified by their Ministry of Education(Louangrath, 2013b). Such diversity in the education system poses challenge to the AEC market because it would be impossible for the market to determine which graduate has employable skills.

AEC labor market demands employable skills among graduates. Such skills should be verified by an independent international body that regulates professional standards in specific occupational fields. It can be anticipated that this change in the market demand will force private universities in the ASEAN countries to change its mode of operation.

Private universities will no longer train the students to supply the local labor market rather it will train the students for the AEC labor market. “AEC will affect the

national vision of education, the content to be taught in education systems, the ways in which such content is delivered, the development of technical and vocational education and training, qualification recognition arrangements and system-wide policy and planning such as investment in education, balance and priority for subsector development"(McCarthy, 2013). AEC will bring change in the market demand and the education industry.

Higher education is seen as an investment that should contribute to the national prosperity in the long term (Henard & Leprince-Ringuet, 2008). Therefore, the return on investment must be good (Yorke, 2000). Quality assurance in higher education has become a focus of attention for private universities (Jones, 2003). "Quality assurance is the process of verifying whether the provided product or service meet or exceed customer expectation" (Ruiz & Sabio, 2012).

A quality assurance system in the case of a university is said to increase student confidence and the university's credibility as a provider of quality services to improve processes and efficiency and to enable a university to better compete with others (Pavlenko, Bojan, & Trif, 2008). Students who are increasingly paying tuition fees might be considered as "clients" of higher education institutions (Telford & Masson, 2005). Therefore, students are concerned about the quality of education that they pay for (Henard & Leprince-Ringuet, 2008).

Tertiary education is changing with regionalism and globalization and therefore quality assurance process must change with it (Ruiz & Sabio, 2012).With the implementation of AEC, quality of education no longer just depends on the infrastructure, number of faculties, or the number of degree programs offered by the university but rather depends on the number of graduates being able to fulfill the

demand of the labor market (Louangrath, 2013b). Universities must be able to produce graduates who have employable skills that are verifiable by an independent international body whose charter is charged with the duty to define and regulate professional standards in specific occupational fields such as: accounting, finance, and management (Id.). Employable skill is the indicator of quality education.

Certification model would be a model that can set up a benchmark to measure the quality of the graduates. This model is based on international standardized examination administered by international trade organizations in each field of study. These certification systems embodies unified standard. The standard is set by the market via the trade and professional associations in the related fields, i.e. ACCA or CPA designation for accounting professionals, CFA for financial advisory and ICPM for management professionals.

Currently, Singapore is the only ASEAN country that has successfully implemented certification model into its education curriculum. This is because employers in Singapore recognize certification or professional designation as a definitive standard for measuring the competence and excellence of graduates (Institute of Certified Professional Accountants Singapore, 2009). Table below shows the list of universities in Singapore that offer certification programs.

Table 2.4: List of Universities in Singapore Offering Certification

Universities / Institutes	Certification programs offered
National University of Singapore	Certification in Financial Analysis

(Continued)

Table 2.4 (Continued): List of Universities in Singapore Offering Certification

Singapore Management University	Certification in Human Resource, Financial Market, Trade and Commodity, Corporate Credit Approval, Financial Market operations, Essentials of Trade Finance, Project Finance, Healthcare Management, Financial Risk Assessment, Corporate Banking, Credit Administration, and Cloud Computing
Nayang Technological University	Certification in Accounting, Business, HR Management, Communication, Education, Engineering, IT and Informational Studies.
Singapore Institute of Management	Certification in Supply Chain Management, Business Analytics, Financial Accounting, Employment Relations, Intellectual Property Law, Aerospace Vehicle Design, Aircraft Engineering, Airport Planning and Management.
Institute of Chartered Singapore Accountants (ISCA)	Certification in Accounting

Education plays an important role in preparing Thailand and Thais for the AEC (Office of the Higher Education Commission, 2011). In order for Thailand to position itself as an international education center for the ASEAN region, both private and public universities must emphasize on the quality and standard of the programs

they offer (Chang, 2011). Quality education is the key to produce qualified graduates who are capable of competing in the new job market (Chang, 2011).

Diploma from university will no longer be adequate for the new labor market, professional designation through certification examination of provable and verifiable skills will be necessary (Louangrath, 2013b). Labor market would no longer be confined to Thailand after the AEC implementation (Khaopa, 2012). Therefore, graduates need additional skills to enhance their employment opportunity in the AEC (Office of the Higher Education Commission, 2011). Thus, universities must produce graduates with verifiable skills; these graduates must be readily absorbed into the AEC labor market.

The education market in Thailand is at a competitive stage (Office of the Education Council, 2008). In order for Thai private universities to compete and fulfill the demand of the new market, they have to integrate certification model into their curriculum. Universities failing to do so would most likely be eliminated from the market (Louangrath, 2013a). Therefore, the management of private universities must understand the different stages of the education market in order to implement better standards and policies into their education system (Id, p. 21).

There are four stages of development in the post secondary education. The first stage of development is to obtain a license for the universities to operate. They obtain it from the Ministry of Education. It gives them the recognition or a license to open and operate universities. The medium of instruction in these universities at this stage is in their local language. The second stage is to implement a bilingual program, where the universities recognize the need of foreign language instruction. The third stage is to establish an International College where the medium of instruction is

English. Faculty deployed in the classroom could be foreigners and locals. At this stage the universities may also engage in collaboration with foreign universities and may provide students opportunities to study abroad for a semester or two. Similarly, universities may also provide double degrees to their students. Thai private universities are at the third stage of the development (Louangrath, 2013b). However, in order to compete in the post AEC education industry, Thai universities must go beyond the third stage, i.e. to the fourth stage of development. The figure below demonstrates the stages of development in the education market.

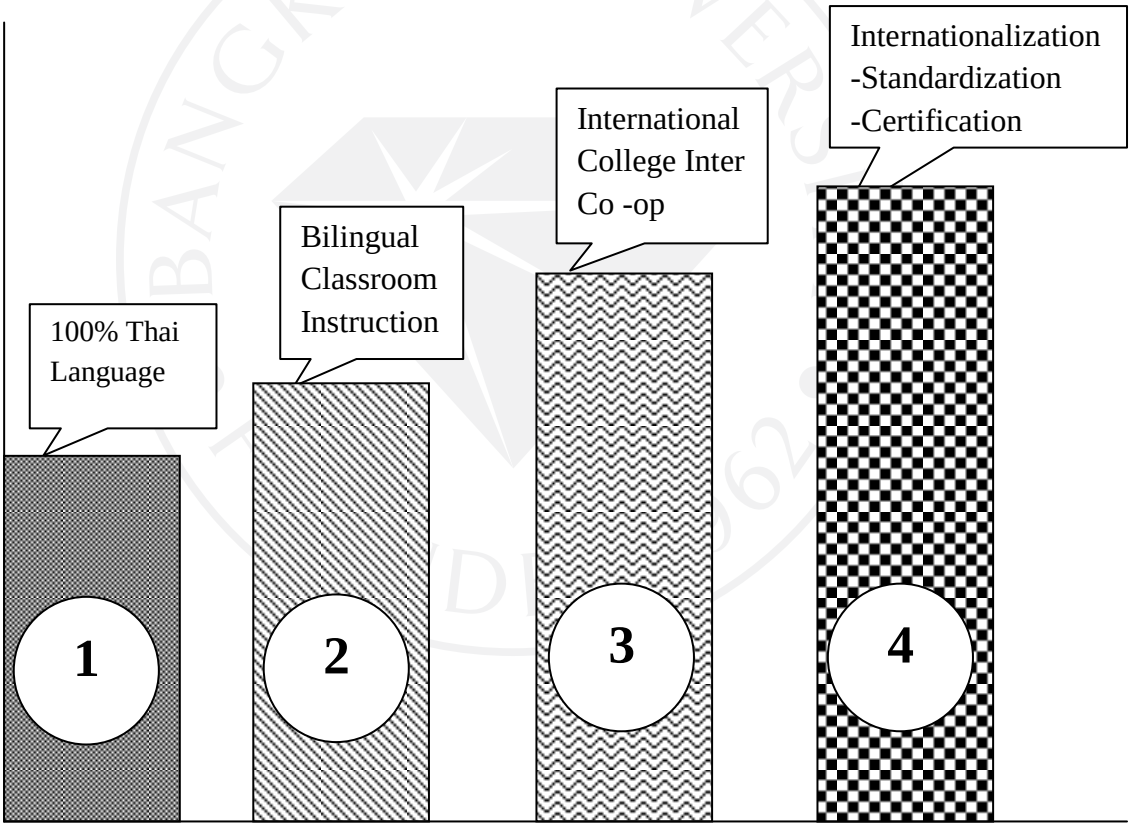

Figure 2.1: Developmental Stages of Education Market

Source: Louangrath, P. T. I. (2013b). *ASEAN economic community - 2015: Economic competitiveness for sustained growth and the implication for education market.* Retrieved from http://ssrn.com/abstract=2225814

The fourth stage of development is internationalization. There are two components of internationalization (1) university accreditation by international body (2) verification of skills by the means of professional certification. Under, internationalization policy the curriculum is recognized globally. This study is limited to the second component of internationalization i.e. verification of skills under certification model. Under this model, the skills are assessed by the means of certification examination backed by international trade organizations in each field of studies, such as the ACCA, CPA certification for accounting, ICPM for business management, and CFA designation for financial advisers. Graduates receive professional designation by passing the certification examination.

Professional certification attests to the skills of graduates (Peterson, 2013). These attested skills reflect upon the university as being a trusted institution to provide quality education (Louangrath, 2013b). Certification serves as a supplemental assurance to students and employers that whatever the assertion made in the diploma is verified by an internationally recognized body of that profession, that he/she truly possesses the skills of that profession (Peterson, 2013). Certification gives the graduate a professional designation (Heathfield, 2014).

A professional designation is a professional title obtained through standardized and internationally recognized examination system (Miller, 2014). In the job market, it is the certification that differentiates a job applicant as a value added applicant from other piles of applications (Project Management Institute, 2012).

Private Thai universities adopting this model can differentiate themselves from the rest of the universities in the education industry. Graduates from these universities will be easily differentiated in the job market. The chance of their

placement in the AEC job market is high. Private Thai universities following certification model will have a competitive advantage over other universities. However, universities unable to implement such model driven by market mechanism will be eliminated from the market.

The education sector in Thailand is facing more intense competition but this competition will lead to the development of students who can compose a quality workforce for the businesses (SCB, 2011). Researches show that there is a shortage of professional workers in ASEAN especially in countries like Singapore and Malaysia.

This could cause brain drain from Thailand to these countries as the remuneration and cost of living in these countries is about 3 times higher than in Thailand. One of the attempts to facilitate labor mobility within the AEC is to develop mutual recognition of professional accreditation enabling workers to work easily in any member country (Id). The claim of this paper that there is a lack of standard for skill assessment and such standard can be achieved through the means of professional certification is consistent with Economic Intelligence Center's assessment.

The coming of the AEC in 2015 presents a new market size and operating condition (McCarthy, 2013). These two elements, larger market size and new operating condition dictate private universities in Thailand to re-think their strategy. AEC speaks of intra - national market, a regional market comprising of ten countries. In order to succeed in this new market, a new strategy is necessary for private Thai universities. Among the ASEAN nations, Singapore is the only nation that has reached the fourth stage of educational development, i.e. the certification stage (Louangrath, 2013b).

Singapore is the only ASEAN country whose universities are operating at the forefront of Asian higher education (Zhang, 2013). Singapore's education system is one of the leading education systems in the world (Hogan, Teh, & Dimmock, 2011). Most likely the other ASEAN countries will gravitate towards the Singapore model.

The Bertrand Effect explains this movement; all the other member countries will follow the first mover in a 45 degree angle (Bertrand, 1883). For instance, Vietnam and Myanmar are already gravitating towards this model. They are aware of the post AEC job market demand; therefore, they have started training their labor force to meet the demand of the new market.

Therefore, Thai universities must realize this trend and should create a new strategy to compete effectively in the AEC education industry. This research aims to answer how private universities would cope with the challenge posed by AEC market. Does certification model establish a standard in assessing the skills of graduates in the AEC market? The figure below shows the literature review model of this research.

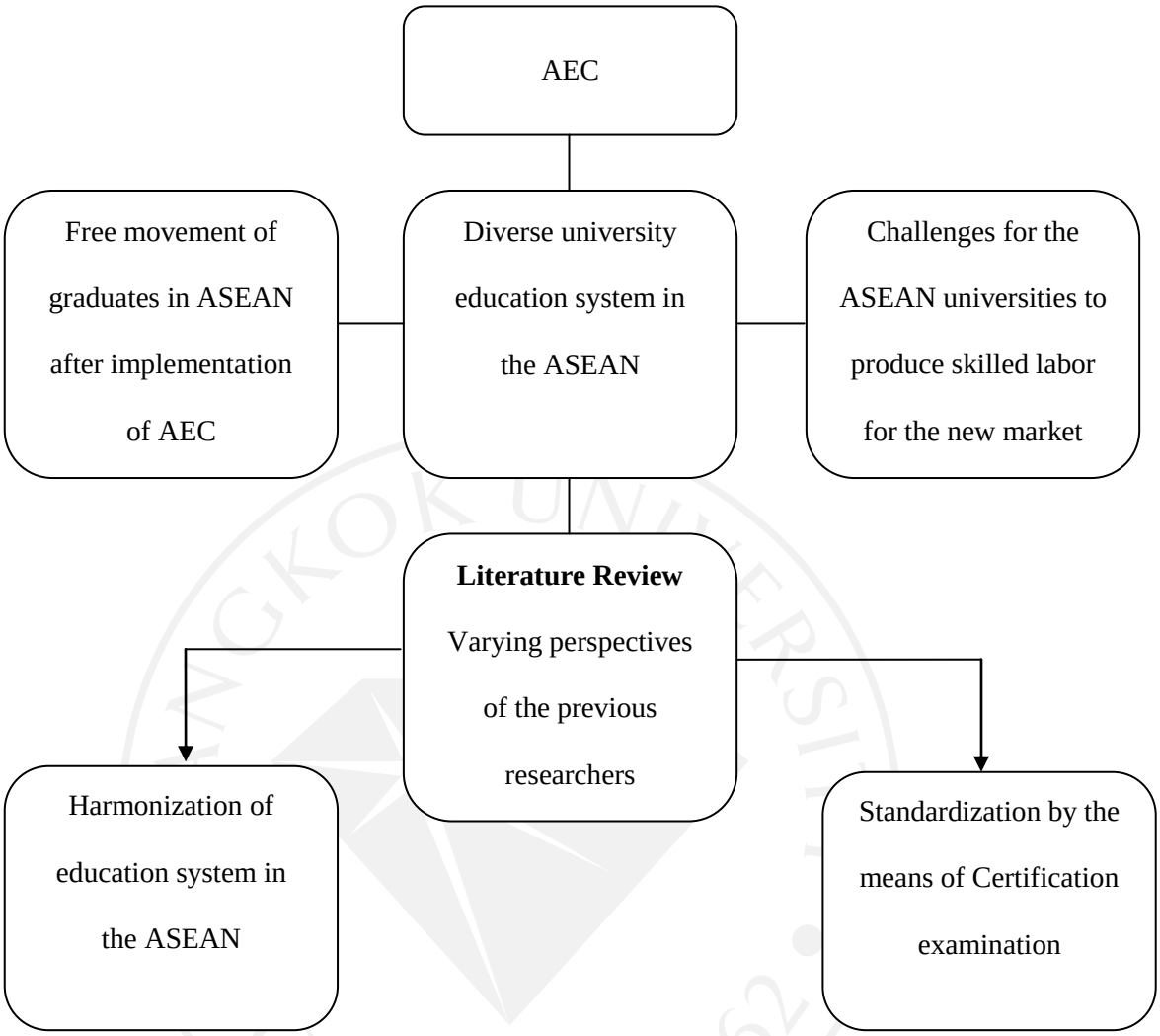

Figure 2.2: Literature Review Model

In the above model, harmonization means uniformity in the education system. It does not mean that it will lead to certification or professional designation. When people speak of harmonization in education, they are talking about inter-university credit transfer and intra-regional recognition of diploma. It has nothing to do with certification. Certification refers to an occupational designation that provides confirmation of an individual's competency in a specified profession or occupational specialty (Halligan, 2013).

2.6 Theoretical Framework

This study has been carried out under the framework of human capital theory (Fisher, 1897) supported by the recruitment theory of Human Resource Management and theory of competitive advantage (Porter, 1998).

The basis of Human Capital Theory is that education makes people skillful and provides them employment opportunity. Individuals invest their time and money in education and skills with an expectation that such investment will yield in future benefits in terms employment and earnings (Becker, 1962). Human capital theory is vital to the proposition that skills increases earnings and directly links higher skill level to higher productivity and greater probability of employment (Taylor, Haux, & Pudney, 2012).

Human capital refers to the skills and knowledge possessed by workers which is produced through the years of education and training (Hall & Lieberman, 2012). Human capital is the key resource of any organization. This is because physical capitals, such as computers, scanners, other office equipments contribute little or no output unless the workers know how to use those equipments.

Today's organizations are aware that human capital is the key to their success therefore they place special attention in selecting workers into their work force (Aamodt, 2013).

Organizations are managed and staffed by people. Without people, organizations cannot exist (Cascio, 2003). Indeed the success and failure of an organization depends on people (Id.). People differ physically and psychologically. For instance, some people are outgoing, others are reserved; some are intelligent while others are dull; some may be skillful while others unskillful.

The point is that these differences must be carefully scrutinized while selecting a person to perform a certain job; so that each person can maximize his or her potential, and so that organization can maximize its efficiency and effectiveness. Therefore, selecting a right person for a right job is a key challenge for the Human Resource Management in any organization.

The AEC allows free movement of skilled labor within the member countries. This movement will pose challenge to the Human Resource Management because applicants from ten member countries may apply for different jobs and these applicants differ physically and psychologically.

Human Resource Management (HRM) is the study that deals with the management of an organization's workforce or the human resource (Cherrington, 1991). The core functions of the Human Resource Management include recruitment, performance evaluation, training and development, compensation and benefits, employee relations and safety and health (Cherrington, 1991).

This research has been carried out under the framework of recruitment function of Human Resource Management. Recruitment is defined as the process of finding or hiring the best qualified candidate for a job opening in a timely and cost effective manner (Cascio, 2003).

Recruitment is fundamental for achieving the organization's goals and objectives. All the human resource functional areas are important, but recruiting function is pivotal as so much is dependent upon its effectiveness (Bowen, Ledford, & Barry, 1991). Failure to recruit talented young people may mean a delay in implementing new plans, may prevent the company from maintaining its competitive

position, and may disrupt the wage structure and employee morale, since the alternative is to hire older, more experienced, more costly people. (Id.)

With the implementation of the AEC, graduates may freely move within the member countries. This movement will place challenge for the Human Resource Management of both large and small companies. The pool of candidates applying for jobs will no longer be limited to national boundaries.

Graduates from ten ASEAN countries will be competing for different jobs. Although some companies may choose to recruit graduates from local market but regional recruiting may be indispensable for certain technical and professional positions (Cherrington, 1991).

Recruitment becomes a critical process because it must supply the best suited personnel with the best skill at the required time within the specified cost (Id.). According to (Cascio, 2003) recruitment of personnel depends on the skills level, projected skills requirement of the company and the external education system. "Education system plays a central role in preparing individuals to enter the labor force, and equipping them with the skills to engage in lifelong learning experience". (Fasih, 2008).

Proper education system provides students with technical skills that help them to enter the labor market and excel in their professional career. Education system has a direct bearing on the employment opportunity of a graduate (Fasih, 2008) In context to the AEC job market, recruiting best candidates will be challenging for companies because education system in the ASEAN countries is diverse (Iskandar, 2009).

It will be challenging to determine which education system is best among the ASEAN countries and which graduates possess employable skills. Recruitment based

on the university diploma will no longer be adequate because there will be ten different diplomas from the member countries. The job market will demand employable skills that are verifiable by an independent body recognized globally. The verification must be in the form of professional certification.

The job market will demand educational institutions to ensure that their graduates possess verifiable skills which are determined by an international standard. Such anticipated demand of the AEC job market will affect the university education in the post AEC era. The quality of the university education would no longer depend on the degree program offered by the university but rather on the successful integration of graduates in the AEC labor market.

The new labor market demands graduates with employable skills that are verifiable by an international independent body whose charter is to regulate professional standard in specific occupational fields (Louangrath, 2013b). For example, the accounting graduates would be certified through ACCA or CPA examination. Similarly finance graduates would be certified through CFA examination. And management graduates would be certified through ICPM examination system. Such international certification produces quality driven human capital with verified skills.

The post AEC labor market will force the university education to change (McCarthy, 2013). This study focuses on the operation of the Thai private universities in the post AEC era. Private universities in Thailand must anticipate the demand of the new labor market. They should understand that AEC presents a new market size and operating conditions.

The AEC market is different from the national market because it is a regional market comprising of ten countries. It as a common market comprising of diverse members, therefore this market seeks to adopt a common ground for standardization that is accepted by all member countries and globally. In education, it is anticipated that the market will force all universities in ASEAN towards a common independent and international standard of skill verification called professional certification. Private universities understanding the demand of the new market and successfully integrating such international standard will gain a competitive advantage over other universities.

Competitive advantage is defined as an advantage over the competitors gained by offering consumers greater value (Porter, 1998). Competitive advantage occurs when an organization acquires an attribute that allows it to outperform its competitors (Porter, 1998). These attributes can include access to natural resources, new technologies, access to highly trained and skilled personnel human resources, or a competitive aid in the business process(Porter, 1998).

AEC provides private universities in the ASEAN with opportunities and challenges (Louangrath, 2013b). The competition among private universities will no longer be confined within the national border. Private universities in Thailand would no longer be competing with local universities but rather with universities in the ASEAN. Students will have freedom to move freely among the member countries to pursue education or job opportunity. Students would choose to study in universities whose curriculum aims at imparting verifiable skills to prepare them for the AEC market.

According to Porter, competitive advantage can be achieved by implementing any of the following four strategies namely, cost leadership strategy, differentiation

strategy, innovation strategy, operational effectiveness strategy. Any private university successfully integrating professional certification into its educational curriculum would differentiate itself from other universities in the ASEAN because professional certification creates value for the university (Louangrath, 2013b). Value creation results from the market response to the number of graduates who passed the professional certification examination and the rate of market absorption of such graduates (Id.). The higher the rate of absorption of the graduates the more valuable the university will become in the market. (Id.)

Integration of professional certification in the university curriculum is one of the key attribute that helps the private universities to gain competitive advantage in ASEAN. Integration of such model means that university must produce graduates that would pass the professional certification examination.

Therefore, part of the process is to prepare students to pass the certification examination. This is a market requirement. Universities adapting their curricula towards training their students to pass certification examination will be successful and competitive in the AEC market (Louangrath, 2013b). The figure below shows the conceptual framework of the research.

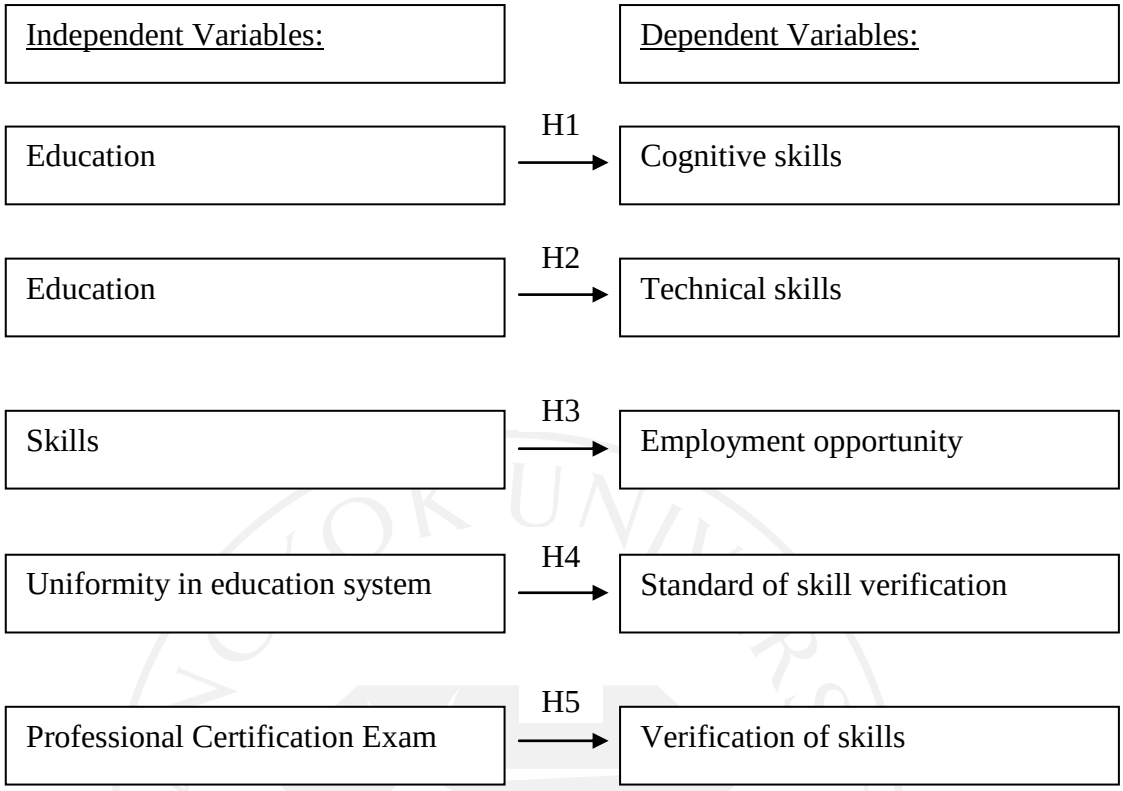

Figure 2.3: Conceptual Framework

The figure above shows the relationship between the dependent and independent variables of this research. It shows that cognitive and technical skills of a graduate depend upon university education. And such skills are essential to find an employment. Therefore, employment opportunity depends on skills of a graduate. Next, the standard of skill verification of a graduate depends on the uniformity in the education system. In context to AEC, the university education systems among ASEAN countries are diverse meaning that AEC market lacks a standard of skill verification of graduates. Skill verification of graduates depends on professional certification examination. Professional certification serves as a uniform standard to verify the skills of the graduates in the AEC market. In other words, standard of uniformity in university education system depends upon the certification model.

Private universities successfully integrating this model into their education curriculum would gain a competitive advantage over rival universities as students would choose to study in a university that provides them with verifiable skills. Graduates passing the professional certification examination can successfully verify their skills and gain a professional designation. The AEC market would absorb graduates possessing verifiable skills regardless of their nationality.

2.7 Hypothesis Development

1. H_A: Cognitive skills of a graduate depend on university education.

   H_0: Cognitive skills of a graduate do not depend on university education.

2. H_A: Technical skills of a graduate depend on university education.

   H_0: Technical skills of a graduate do not depend on university education.

3. H_A: Employment opportunity for a graduate depends on skills.

   H_0: Employment opportunity for a graduate does not depend on skills.

4. H_A: University education system in ASEAN is diverse and lacks a common standard to verify the skills of graduates after implementation of AEC

   H_0: University education system in ASEAN is uniform and there is a common standard to verify the skills of graduate after implementation of AEC.

5. H_A: Verification of skills depends on professional certification examination.

   H_0: Verification of skills does not depend on the professional certification examination.

CHAPETR 3

RESEARCH METHODOLOGY

"A methodology best suited for the problem under consideration, and the objectives of the research, should guide the type used." (Benbasat, 1984). The main concern of the researcher is to choose the methodology that provides valid answers to the research questions.

University education is one of the key factors in assessing the skills of graduates. With the implementation of AEC, intra – regional flow of university graduates will increase significantly. This intra – regional movement of university graduates poses challenges to the AEC labor market as the university education system in the ASEAN is diverse. Assessing skills of the graduates based on the university degree will no longer be adequate as there will be degrees from ten different countries. Every member country would claim that their education system is the best and their graduates are skillful. However, it is the AEC market that determines whether a graduate is skillful. The AEC market demands employable skills that are verifiable by an independent body recognized globally. The verification must be in the form of professional certification, standardized examination system administered by an independent body in relevant field of studies. This anticipated change represents a market mechanism forcing universities, especially private universities in the ASEAN to change its mode of operation. To approach the accurate effects of AEC implementation, this study uses Thailand as a case study.

This research paper uses mixed methodology to examine the effects of independent variable on dependent variable for each hypothesis. The dependent

variables in this research are defined as cognitive and technical skills of a graduate, employment opportunity of a graduate, standard of uniformity in the ASEAN education system, verification of skills. The independent variable, i.e. explanatory variable is the professional certification examination, a standard to verify the skills of graduates.

3.1 Sampling

Sampling is defined as a process of selecting a subset of individuals from a given statistical population in order to estimate the characteristics of the entire population (Yates, Moore, & Starnes, 2008). There are various sampling techniques. This research uses cluster sampling technique. In this technique the total population is divided into sub-groups (clusters), and a sample is selected randomly from the sub groups (Yates, Moore, & Starnes, 2008).

The population elements of this research are divided into four clusters, namely: students, professors, employees and employers. These four clusters are selected as the population of this research because this research concerns AEC and its effects on university education and job market. Students and professor are the active components of university; employees and employers are the active components of the job market.

The samples were selected randomly from each population cluster. Students and professors were members of Bangkok University, Durakit Bundit University and Webster University. Populations from non-academic institutions were drawn from several business centers in Bangkok. Table 4.4 shows the details of the business centers, that the respondents belonged to. The rationale for selecting respondents from

various universities and companies is supported by the fact that such technique minimizes bias in the response.

3.2 Minimum Sample Size Determination

The objective of minimum sample size determination is to verify the condition $\overline{X} = \mu$ (sample mean falls under the population mean). This research undertakes this verification process in determining the minimum sample size by three methods: (i) non-finite population method (Sincich, Levine, & Stephan, 2002), (ii) n-hat method (Louangrath & Rewtrakunphaiboon, 2013), and (iii) sample size guidelines proposed by (Agresti & Min, 2003). These three methods yield consistent result of minimum sample size. Details of these experiments for minimum sample size determination follows.

Minimum sample size determination is a method of selecting number of observations or samples for any empirical research (Yates et al., 2008). The objective of selecting a minimum sample size is to make inferences about the population of the research from the information collected from the selected minimum sample (Scheaffer, III, & Ott, 1996).

In social science, there are various methods to determine a minimum sample size. Researchers must find appropriate method to calculate the minimum sample size. The selection of each method depends on the nature of the population i.e. finite or non finite population, type of hypothesis test, confidence interval procedures and normality of data distribution. In the present case, the population of the study is non-finite; therefore, the researcher uses the method for minimum sample size

determination which does not depend on known population (Sincich et al., 2002). This method involves the use of predefined confidence interval and error correction:

$$n_{\min} = \frac{(Z_{\alpha/2})^2 \sigma^2}{E^2}$$

Where, $Z = \frac{(X_i - \overline{X})}{S}$

σ = Standard deviation of the assumed population inferred from the test of initial sample

n = number of samples

E = Sampling error (SE) = $\frac{\sigma_x}{\sqrt{n}}$

This method involves the use of estimate population mean. To assure that there is no data bias in the sampling, the researcher undertakes five series of random samples (n) with 50 observations each. This technique of re sampling is known as bootstrapping (Mooney & Duval, 1993). The table below shows the calculation of minimum sample size under equation (1) as follows:

Table 3.1: Minimum Sample Size Calculation under Non Finite Population Method

Items	Bootstrap 1	Bootstrap 2	Bootstrap 3	Bootstrap 4	Bootstrap 5
X	0.79	0.78	0.85	0.89	0.88
$\bar{x}$	0.84	0.84	0.84	0.84	0.84
$\sqrt{n}$	7.07	7.07	7.07	7.07	7.07
S	0.27	0.25	0.19	0.05	0.03
T	1.64	1.64	1.64	1.64	1.64
$\lvert\mu\rvert$	0.73	0.72	0.81	0.88	0.87
Z	0.18	0.23	0.06	1.04	1.4
Z^2	0.03	0.05	0	1.08	1.96
$\lvert\sigma\rvert$	62.2	47.55	184	11.67	8.64
σ^2	3876.6	2260.75	33875.3	136.19	74.69
$\lvert E\rvert$	8.81	6.72	26.03	1.65	1.22
E^2	77.53	45.22	678	2.72	1.49
Min sample	1.58	2.69	0.2	54.08	98
Avg. min sample	31.31				

From the table above the researcher determines minimum sample size for each series. Next, the researcher takes the average minimum samples of the total series to determine the minimum sample size for this research. The average minimum sample size is 31. 31.

To verify the determined sample size and to assure that no data bias was conducted during the minimum sample size calculation, the researcher further conducts a minimum sample size test using n – hat method (Paul T. I. Louangrath & Rewtrakunphaiboon, 2013). This method uses initial or series of sample to determine the population characteristics. The initial sampling may be more than one sample. In doing so, a bootstrap process may be used (Mooney & Duval, 1993). This method is independent on population size and involves the use of confidence interval procedure under conventional test statistics. The minimum sample size is calculated in following 7 steps under this method:

Step 1: Estimate Population Mean by using t – equation:

$$\mu = t\left(S_x / \sqrt{n}\right) - \bar{x}$$

The researcher takes the series of samples and bootstraps the samples to estimate the population mean. The table below shows the calculation of the estimated population mean using t – equation.

Table 3.2: Estimating Bootstrapped Population Mean

Bootstrapping series of initial samples						
Items	Series 1	Series 2	Series 3	Series 4	Series 5	Bootstrapping
$t_{0.95,\infty}$	1.64	1.64	1.64	1.64	1.64	1.64
S	0.27	0.25	0.19	0.05	0.03	0.05
$\bar{x}$	0.79	0.78	0.85	0.89	0.88	0.84
n	50	50	50	50	50	50
$\sqrt{n}$	7.07	7.07	7.07	7.07	7.07	7.07
$S/\sqrt{n}$	0.04	0.04	0.03	0.01	0.00	0.01
$\mu = t\left(S_x/\sqrt{n}\right) - \bar{x}$	0.73	0.72	0.81	0.88	0.87	0.83

From the table above, the bootstrapped population mean is given as 0.83

Step 2: Estimate Population Standard Deviation Using Z equation:

$$\sigma = \left(\frac{\bar{x} - \mu}{Z}\right)\sqrt{n} \tag{4}$$

The table below shows the calculation of estimated population standard deviation using z equation.

Table 3.3: Estimating Bootstrapped Population Standard Deviation

Bootstrapping series of initial samples						
Items	Series 1	Series 2	Series 3	Series 4	Series 5	Bootstrapping
$Z_{0.95,\infty}$	1.65	1.65	1.65	1.65	1.65	1.65
$\bar{x}$	0.79	0.78	0.85	0.89	0.88	0.84
$\sqrt{n}$	7.07	7.07	7.07	7.07	7.07	7.07
μ	0.73	0.72	0.81	0.88	0.87	0.83
σ	0.27	0.25	0.19	0.05	0.03	0.05

From the table above the bootstrapped population standard deviation is given as 0.05

Step 3: Compute Expected Alpha:

$$\hat{E} = \frac{n - n[1 - df(\alpha)]}{n} \quad (5)$$

Where,

df = n-1 and

α = specified error level which is generally set at 5%

The table below shows the calculation of expected alpha.

Table 3.4: Expected Bootstrapped Alpha

Bootstrapping series of initial samples						
Items	Series 1	Series 2	Series 3	Series 4	Series 5	Bootstrapping
n	50	50	50	50	50	50
df	49	49	49	49	49	49
α	0.05	0.05	0.05	0.05	0.05	0.05
$df(\alpha)$	2.45	2.45	2.45	2.45	2.45	2.45
$1-df(\alpha)$	-1.45	-1.45	-1.45	-1.45	-1.45	-1.45
$n[1-df(\alpha)]$	-72.50	-72.50	-72.50	-72.50	-72.50	-72.50
$n-n[1-df(\alpha)]$	122.50	122.50	122.50	122.50	122.50	122.50
$[n-n(1-df(\alpha))]/n$	2.45	2.45	2.45	2.45	2.45	2.45

From the table above, the bootstrapped expected error is equal to 2.45

Step 4: Estimate n – hat

$$\tilde{n} = \left(\frac{\sigma^2 n}{S^2}\right)^{-\hat{E}} \qquad (6)$$

The table below shows the calculation of estimated n – hat.

Table 3.5: Estimated Bootstrapped n - hat

Bootstrapping series of initial samples						
Items	Series 1	Series 2	Series 3	Series 4	Series 5	Bootstrap
n	50	50	50	50	50	50
σ^2	0.07	0.06	0.04	0.00	0.00	0.00
S^2	0.07	0.06	0.04	0.00	0.00	0.00
$\left[n - n(1 - df(\alpha))\right]/n$	2.45	2.45	2.45	2.45	2.45	2.45
$\tilde{n} = \left(\frac{\sigma^2 n}{S^2}\right)^{-\hat{E}}$	20.16	20.16	20.16	20.16	20.16	20.16

The value of $\tilde{n}$ = 20.16 which is a raw estimate because it is calculated on the basis of the estimated population variance, actual sample variance and estimated distribution error. Therefore, $\tilde{n}$ has to be processed into a standard value. The distribution error may run from 0.01 to 0.99, therefore, it is necessary to conduct an experiment by allowing error to move towards the point estimate from the sample's maximum estimated size and from sample's minimum estimated size (Louangrath & Rewtrakunphaiboon, 2013).

Step 5: Calculation of Minimum Sample Range

$$n^* = \frac{\vec{n}_i^{0.99}}{\vec{n}_j^{0.01}} \quad (7)$$

Where,

$$\vec{n}_i^{0.99} = \vec{n}_i / 0.99$$

$$\vec{n}_j^{0.01} = \vec{n}_j / 0.01$$

$$n_r = n_i^{0.99} - n_j^{0.01}$$

The table below shows the calculation of the minimum sample range.

Table 3.6: Calculation of Minimum Sample Range

Bootstrapping series of initial samples						
Items	Series 1	Series 2	Series 3	Series 4	Series 5	Bootstrap
Min of range: 0.99	20.37	20.37	20.37	20.37	20.37	20.37
Max of range: 0.01	2016.2	2016.2	2016.2	2016.2	2016.2	2016.2
Minimum sample range	1995.7	1995.7	1995.7	1995.7	1995.7	1995.7

Step 6: From the Range, the Median of Minimum Sample Range is determined by:

$$n_r^M = \frac{n_r}{2} = \frac{1995.7}{2} = 997.89 \quad (8)$$

Step 7: Minimum Sample Size determination under n – hat Method

The minimum sample size for an unknown population N is given by taking the square root of the specified error of minimum sample median thus:

$$\hat{n} = \sqrt{n_r^M} = \sqrt{997.89} = 31.59 \quad (9)$$

According to n – hat method (Louangrath & Rewtrakunphaiboon, 2013) for minimum sample size determination, the minimum sample size = 31. 59 which is consistent with the method of minimum sample size determination for non – finite population (Sincich et al., 2002).

A literature review of minimum sample size determination suggests that a large sample size is required only if the data distribution is skewed away from normality (Kish, 1965). However, if the data is normally distributed and the sampling is random, a sample size at any magnitude would fairly represent the population (Id). (Agresti & Min, 2003) suggested that a sample size of 30 is generally accepted as the lower bound for large samples, with a normal population. After three methods of minimum sample size confirm that the minimum sample size is about 30, it is concluded that that the minimum sample size is 31 samples for this research.

The researcher collected a total of 251 samples for this research. This sample size: 251/31 represents 8.10 times the minimum sample size requirement called for by methods of (Agresti & Min, 2003; Louangrath & Rewtrakunphaiboon, 2013; Sincich et al., 2002).

3.3 Research Instrument

The researcher uses survey questionnaire as a research instrument to collect data. The survey questionnaire is divided into 2 sections. The first section consists of demographic questions. This section captures the general picture of the respondent's characteristics, such as gender, age, occupation, name of the university or company, and educational background.

The second section consists of research specific questions. These questions are used to test five hypotheses of this research. There are 26 questions in this section. Each question has three answer choices: Agree, Neutral, and Disagree. Respondents are asked to select "agree" for positive answer, "disagree" for negative answer and "neutral" for neither positive nor negative answer.

3.4 Data Coding

Each respondent is instructed to indicate their opinion towards each item by checking agree for positive response, neutral for neither positive nor negative response, and disagree for a negative response.

The researcher labels the response of each respondent by assigning nominal codes as follows:

-1 = Disagree

0 = Neutral

1 = Agree

Since the nominal codes are assigned values used for the purpose of data identification and do not signify any numerical value (Babbie, 2010), the researcher uses a feature scale to treat the scores. Feature scaling is a method used to standardize

or normalize the characteristic of data to make it independent of each other (Aksoy & Haralick, 2000). The purpose of the researcher to implement the feature scale is to quantify the lowest score a natural number 0, not an arbitrary low. The following formula is used to transform the nominal score and change it to a quantified featured scale (Aksoy & Haralick, 2000).

$$\text{Featured Scale} = \frac{(X - \min score)}{(\max score - \min score)}$$

Where,

X = original score

Min score = -1

Max score = +1

Therefore;

-1	=	$\frac{(-1-(-1)}{(1-(-1)}$	=	0	=	Disagree
0	=	$\frac{(0-(-1)}{(1-(-1)}$	=	0.5	=	Neutral
1	=	$\frac{(1-(-1)}{(1-(-1)}$	=	1	=	Agree

3.5 Reliability Test

Reliability is defined as the trustworthiness of a research instrument (Louangrath, 2013d). It is imperative to determine the trustworthiness of a research instrument because the data obtained from the instrument will be used to prove or disprove the hypotheses of the research. This research uses population projection analysis as a tool for determining the reliability of the survey. The decision rule of

population projection analysis lies in the supposition that if individual survey question is defective, the entire survey instrument is also defective (Louangrath, 2013d). The reliability test is divided into two parts in this research.

1. Reliability test of the individual survey questions and,
2. Reliability test of the entire survey.

3.6 Reliability Test of the Survey Questions

The researcher denotes the number of answer choices as N. The degree of freedom of the answer choices is denoted by $df = N - 1$. The level of unreliability is the expected alpha (Louangrath, 2013d) which is given by:

$$\hat{E}(\alpha) = \frac{N - N[1 - df(\alpha)]}{N}$$

Where,

N = 3

α = error term which is set at 0.05 (set at a standard of 95% confidence interval)

df = degree of freedom which is calculated by

$df = N - 1 = 2$

$$\hat{E}(\alpha) = \frac{3 - 3[1 - 2(0.05)]}{3} \quad = \quad 0.1 \quad =. \quad 10\%$$

A question of three answer choices produces an expected error (unreliability) of 0.10 or 10% under 0.95 confidence interval standard. After determining the expected error, reliability of question is calculated by using the following formula:

$$P_{value} = 1 - \hat{E}(\alpha)$$

= 1 – 0.1

= 0.9 i.e. 90%

Each survey questions is 90% reliable.

3.7 Reliability Test of the Survey

The researcher determines the reliability of the survey by calculating the p-value of the survey through the use of estimated alpha for each question. The calculation for the unreliability of the survey (Louangrath, 2013d) is given by:

$$\hat{E}(\alpha) = \frac{N - N(2\sigma)}{N - 1}$$

Where,

N = total number of questions in the survey = 26

σ = standard deviation = 0.45

$$\hat{E}(\alpha) = \frac{N - N(2\sigma)}{N - 1}$$

$$\hat{E}(\alpha) = \frac{26 - 26(2 * 0.45)}{26 - 1}$$

= 0.104

The reliability of the survey can be derived from:

$$P_{value} = 1 - \hat{E}(\alpha)$$

= 1 – 0.104

= 0.896 i.e. 90%

The survey questionnaire is 90% reliable.

Moreover, the test whether the survey data is reliable is the test for the fair reflection of sample upon population. Fair reflection is determined by $\mu \pm 2\sigma$ where $\overline{X} = \mu$.

Therefore, the researcher further investigates the reliability of the survey by undertaking following three steps.

1. Determine the standard deviation of the sample
2. Use t – equation to determine population mean with a predetermined level of confidence 0f 95% and the degree of freedom depending upon the number of questions on the survey (N) and
3. Use Z – equation with critical value of 95% level of confidence to determine the population standard deviation and evaluate whether X falls within $\mu \pm 2\sigma$. If so the survey is considered reliable (Louangrath, 2013d).

In the present case,

Standard deviation of sample = 0.22

Sample mean = 0.84

$$t_{251} = \frac{\overline{X} - \mu}{s/\sqrt{n}} \qquad 1.64 = \frac{0.84 - \mu}{0.22/\sqrt{251}} \qquad \mu = 0.82$$

$$\sigma = \frac{\overline{X} - \mu}{Z} \qquad \sigma = \frac{0.84 - 0.82}{1.65} \qquad \sigma = 0.012$$

Next, the researcher finds the range of confidence interval by: $\mu \pm 2\sigma$

0.82 + 2(0.012) = 0.84 and

0.82 – 2 (0.012) = 0.79

Since, sample mean = 0.84 and it falls under the range of population mean (0.84 – 0.79), the research instrument is considered to be reliable.

3.8 Validity Test

Validity is defined as the degree of agreement between the claimed measurement and the real world (Brians, Willnat, Manheim, & Rich, 2011). In social science, the result of a research comes from the score obtained through a research instrument; therefore the instrument should be valid (Paul T.I. Louangrath, 2013c). There are three categories of validity tests, namely content validity, criterion validity and construct validity.

3.9 Content Validity

Content validity is a validity test that depends on the response of the subject matter experts (SME) to the following questions (i) Is the skills or knowledge measured by the item essential, (ii) Is the measurement useful but not essential, and (iii) Is the knowledge measured by the item unclear (Paul T.I. Louangrath, 2013c).

This research uses the index of item – objective congruence (Rovinelli & Hambleton, 1977) to accomplish content validity test. It is the process where the SME's rate individual items on the degree to which each item measure the specific objective listed by the researcher (Id).

The researcher selected three subject matter experts to evaluate whether the developed questions measure the specific objectives of the research. Professional disciplines of the selected subject matter experts were researcher, associate professor with Ph. D degrees and, the CEO of a private company in Thailand. Each subject matter expert evaluated each items by giving a rating of:

+1 = for clearly measuring the objective,

-1 = for clearly not measuring the objective and

0 = for the items that are unclear

According to (Rovinelli & Hambleton, 1977), item objective congruence can be accomplished through the following formula:

$$I_{ik} = \frac{(N-1)\sum_{j=1}^{n} X_{ijk} + N\sum_{j=1}^{n} Xijk - \sum_{j=1}^{n} X_{ijk}}{2(N-1)n}$$

Where, I_{jk} = Item objective congruence

N = number of objectives

n = number of subject matter experts

X= rating of item (-1, 0, +1) as a measure of objective

The table below shows the rating and the item objective congruence (IOC) score of the individual items as evaluated by the subject matter experts.

Table 3.7: Rating of the Individual Items by SMEs

Items	SME 1	SME 2	SME 3	IOC
Education enables people to develop cognitive skills	1	1	1	1
Education enables people to develop technical skills	1	1	1	1
A person with higher education background possesses higher skills	1	1	1	1

(Continued)

Table 3.7 (Continued): Rating of the Individual Items by SMEs

A person with lower education background possesses lower skills	1	1	1	1
There is a difference between skills and education	1	1	1	1
Skills may be acquired from job experience (outside of classroom training)	1	1	1	1
Skills helps people to find employment	1	1	1	1
A more skilled person has a better chances of getting employed	1	1	1	1
Employers hire employees by matching applicant's skills to company's required skills	1	1	1	1
Getting job depends on referral rather than skills	1	1	1	1
Employers look for evidence of applicant's ability for a job	1	1	1	1
AEC will allow free movement of skilled labor force in the region	1	1	-1	0.33
University education system in ASEAN is different from one another	1	1	-1	0.33

(Continued)

Table 3.7 (Continued): Rating of the Individual Items by SMEs

There is a lack of common standard to verify the skills of graduates from different member countries	1	1	-1	0.33
AEC market demands for verification of skills of graduates	1	1	-1	0.33
Skills can be verified by the means of professional certification examination system	1	1	1	1
Professional certification examination is a standardized examination recognized internationally	1	1	1	1
Professional certification examination verifies that a person has the knowledge and skills to perform a specific job	1	1	1	1
The verification comes in the form of certificate earned by passing a standardized exam accredited by an independent organization specialized in a specific field	1	1	1	1
The certification examination is administered by each university attended by the students	1	1	1	1

(Continued)

Table 3.7 (Continued): Rating of the Individual Items by SMEs

Passing the certification examination does not necessarily mean you have the skills	1	1	1	1
Average IOC score for the entire questionnaire				0.85

From the table above, the item objective congruence score of the research instrument is 0.85 i.e. 85%. The research instrument is considered to be valid if the items are 80% congruent to the objectives of the research (Haley, Coster, & Faas, 1991). Since, the average IOC score of the research instrument is 85%, the instrument of this research is considered valid.

CHAPTER 4

DATA ANALYSIS

The researcher uses different techniques to analyze the data collected from the survey questionnaire. The techniques are listed as follows:

1. The researcher uses descriptive statistics (frequency and percentage) to describe and analyze the demographics of the research
2. Secondly, the researcher uses descriptive statistics (mean and standard deviation) to describe the opinion of the respondents on different variables.
3. Next, the researcher uses Pearson's correlation to determine whether there is a relationship between the dependent and independent variables.
4. Finally, the researcher conducts t - test to test each hypothesis.

4.1 Demographic Data

1. Gender

Table 4.1: Gender of Respondents

Gender	Frequency	Percentage
Male	145	57.8%
Female	106	42.2%
Total	251	100%

Table 4.1 illustrates the frequency and percentage distribution of gender of the respondents of this research. Out of 251 respondents surveyed in this research, 42.2% were female respondents and 57.8% were male respondents.

2. Age

Table 4.2: Age of Respondents

Age	Frequency	Percentage
20 – 25 years	60	23.9%
26 – 30 years	45	17.9%
31 – 35 years	126	50.2%
More than 35 years	20	8%
Total	251	100%

Table 4.2 illustrates the frequency and percentage distribution of age of the respondents of this research. The age group is categorized into 4 groups in this research. The largest group of respondents falls into the age group of 31 – 35 years. It represents 50.2% of the total sample of this research. Secondly, the respondents aged 20 – 25 years represent 23.9% of the total sample. Next, respondents aged 26 – 30 years represent 17.9% of the total sample. Respondents aged more than 35 years represent only 8% of the total sample.

3. Occupation

Table 4.3: Occupation of Respondents

Occupation	Frequency	Percentage
Student	44	17.5%
Professor / Faculty	2	0.8%
Employer	10	4%
Employee	195	77.7%
Total	251	100%

Table 4.3 illustrates the frequency and percentage distribution of the occupation of the respondents of this research. The occupation of the respondents is categorized into 4 groups namely, students, professors / faculty members, employer, and employees. The result of the survey shows that 77.7% of the respondents are employees 17.5% are students, 4% are employers and 0.8% are either professors or faculty members.

4. Name of the Organization

Table 4.4: Name of the Organization of Respondents

Name of Company	Frequency	Percentage
AU Bon Pain Café	9	3.5%
AT Times	36	14.34%

(Continued)

Table 4.4 (Continued): Name of the Organization of Respondents

Axentel Technologies	2	0.8%
Baskin Robbins	10	3.9%
Bangkok University	42	16.7%
DHL Company Limited	2	0.8%
Dhurakit Bandit University	12	4.7%
Excelsior	1	0.4%
Ferrostal	1	0.4%
Glasgow	3	1.19%
GMM Media	1	0.4%
Golden Donuts Co. Ltd	76	30.27%
Grand Millennium	31	12.35%
IT Gadget	3	1.19%
KOG Logistics	1	0.4%
Leo International Design	2	0.8%
Modern Form Public Co.	1	0.4%
Mudman Co. Ltd	3	1.19%
Multilink Sourcing	2	0.8%
NLP Coach Thailand	1	0.4%
Nomchow Thailand	2	0.8%
Oishi Trading	1	0.4%
OMM Media	6	2.39%

(Continued)

Table 4.4 (Continued): Name of the Organization of Respondents

TEI International	1	0.4%
Thai Press	1	0.4%
Webster University	1	0.4%
Total	251	100%

Table 4.3 illustrates the frequency and percentage distribution of the name of the company the respondent is working at or the name of the university the respondent is enrolled at. The respondents of this research belong to 26 different organizations. The respondents working at Golden Donuts Company Limited represent the highest percentage distribution of the total samples at 30.27 %. Next respondents from Bangkok University represent second largest group of respondents with 16.7% of the total sample. Thirdly respondents from AT Times represent 14.34% of the total sample. Respondents from Grand Millennium Company Limited represent 12.35% of the respondents. Finally, respondents combined from other companies represent 26.34% of the total sample.

5. Education Level

Table 4.5: Education Level of Respondents

Education Level	Frequency	Percentage
Bachelors'	181	72.1%
Masters'	70	27.9%

(Continued)

Table 4.5 (Continued): Education Level of Respondents

Higher than masters'	0	0%
Total	251	100%

Table 4.5 illustrates the frequency and percentage distribution of the education level of the respondents of this research. The education level of the respondents are categories into 3 groups namely, Bachelors' degree, Masters' degree, and higher than Masters' degree. 72.1% of the respondents of this research hold a bachelors' degree and 27.9% of the respondents hold Masters' degree.

4.2 Descriptive Analysis of the Level of Agreement of the Respondent's Perception towards Different Variables of the Research

The researcher uses itemized rating scale to construct a range. This range will be used to measure the perception level of the respondents towards each variable. The researcher uses the following formula to construct the range.

Itemized rating scale: $\frac{Max - Min}{n_l}$

$= \frac{1-0}{3}$

$= 0.33$

The mean of each individual item ranging from 0 - 1 falls within the following interval:

Interval of Means	Perception
0.68 – 1.00	Agree
0.35 – 0.67	Neutral
0.00 – 0.34	Disagree

Table 4.6: Analysis of Respondent's Perception towards the Relationship between Education and Skills

Education and Skills	Mean	SD	Perception
1. Education enables people to develop cognitive skills.	0.96	0.122	Agree
2. Education enables people to develop technical skills.	0.94	0.157	Agree
3. A person with higher education background possesses higher skills	0.83	0.293	Agree
4. A person with lower education background possesses lower skills	0.76	0.355	Agree
5. There is a difference between skills and education	0.96	0.132	Agree
6. Skills may be acquired from job experience (outside of classroom training)	0.99	0.700	Agree

Most respondents agree that education enables cognitive and technical skills with a respective mean score of 0.96 and 0.94. They believe that people with higher education have higher skills and people with lower education have lower skills with a respective mean score of 0.83 and 0.76. The respondents also agree that education and skills are two different factors with a mean score of 0.96. Finally, they agree that skills may be acquired from other sources, such as job experience with a mean score 0.99

Table 4.7: Analysis of the Respondent's Perception towards the Relationship between Skills and Employment Opportunity

Skills and Employment	Mean	SD	Perception
7. Skills helps people to find employment	0.95	0.152	Agree
8. A more skilled person has a better chance of getting a job than a less skilled person	0.95	0.166	Agree
9. Employers hire employees by matching applicant's skills to company's required skills	0.92	0.186	Agree
10. Getting job depends on referral rather than skills	0.45	0.336	Neutral
11. Employers look for evidence of applicant's ability for the job	0.91	0.195	Agree

Most respondents agree that skills help people to find employment and a person with higher skills have higher employment opportunity with a same mean score of 0.95 each. Moreover respondents agree that employers hire employees by matching the candidate's skills to the company's required skills with a mean score of 0.92. However, respondents have a neutral attitude towards job opportunity and referral with a mean score of 0.45. Finally respondents agree that employers look for evidence of applicant's ability to perform the specific job with a high mean score of 0.91.

Table 4.8: Analysis of the Respondent's Perception towards AEC and Education System in ASEAN Countries and its Effects on Job Market

Education system in ASEAN	Mean	SD	Perception
12. AEC 2015 will allow free movement of skilled labor force in the region	0.90	0.210	Agree
13. University education systems in ASEAN countries are different from one another.	0.92	0.18	Agree
14. There is a lack of common standard to verify the skills of graduates from different member countries	0.87	0.22	Agree
15. AEC market demands for verification of skills of the graduates	0.91	0.20	Agree

Most respondents agree that AEC will allow free movement of skilled labor force in the region with a high mean score of 0.90. Moreover, respondents perceive

that university education systems in ASEAN are different from one another with a mean score of 0.92 which is consistent to the theme of the research. Respondents also agree that there is a lack of common standard to verify the skills of the graduates from different member countries in ASEAN and AEC market will demand for the verification of skills of the graduates with a respective mean score of 0.87 and 0.91.

Table 4.9: Analysis of the Respondent's Perception towards Skill Verification and Professional Certification Examination System

Professional Certification and skill verification	Mean	SD	Perception
16. Skills can be verified by the means of professional certification examination system	0.804	0.275	Agree
17. Professional certification examination is a standardized examination recognized internationally	0.92	0.188	Agree
18. Professional certification verifies that a person has the knowledge, and skills to perform a specific job.	0.824	0.247	Agree
19. The verification comes in the form of a certificate earned by passing a standardized exam that is accredited by an independent organization specialized in a specific field	0.89	0.214	Agree

(Continued)

Table 4.9 (Continued): Analysis of the Respondent's Perception towards Skill Verification and Professional Certification Examination System

20. The certification examination is administered by each university attended by the student	0.71	0.281	Agree
21. Passing the certification examination does not necessarily mean you have the skills	0.17	0.321	Disagree

Most respondents agree that skills can be verified by the means of professional certification examination system with a mean score 0.80. Respondents agree that professional certification is a standardized examination recognized globally with a mean score 0.92. They also agree that professional certification verifies that a person has the knowledge, and skills to perform a specific job with a mean score 0.82.Next, they agree that the verification comes in the form of a certificate earned by passing a standardized exam that is accredited by an independent organization specialized in a specific field with a mean score 0.89.

Most respondents agreed that professional certification examination is administered by each university attended by the student with a high mean score of 0.71.However, the exam is not administered by the university attended by the student, in fact it is administered by an independent organization specialized in the specific field. In the previous question, respondents agreed that professional certification examination is administered by an independent organization specialized in the specific field and secondly they agree that the examination is administered by individual university. The researcher observes inconsistency and contradiction in the

response of the respondents. It shows that the respondents do not have complete knowledge of professional certification examination or they misunderstand it.

Finally, most respondents disagree that passing certification does not necessarily mean you have the necessary skills with a mean score 0.17, which means that the respondents agree that is a person passes a certification examination, he / she has the necessary skills to perform the specific job.

4.3 Hypothesis Tests

Hypothesis 1: Cognitive skills depend on education

H_0 : Cognitive skills do not depend on education.

H_A : Cognitive skills depend on education.

Education is one of the top priority policy areas of governments around the world and is viewed as an essential element in global competition (Hanushek & Woessmann, 2008). Education is an important determinant of labor market opportunities in many countries and is rewarded because of the cognitive skills it indicates(Barone & Werfhorst, 2011). Moreover, education is viewed as an attribute that is correlated to pre existing variation in cognitive qualities, thereby enhancing education as a screening device that signals cognitive skills (Arrow, 1973). (Becker, 1962)suggests that education provides individuals with cognitive and productive skills, and employers are willing to reward such skills. In simple words education is an investment in skills that pays off later in outcomes that matter (Hanushek & Woessmann, 2008). It is assumed that the relationship between education (X) and cognitive skills (Y) may be summarized by simple linear regression equation in a

form of $Y = a + bX + c$ where a = Y-intercept, b = slope and c = forecast error. The researcher computes the hypothesis test in following 4 steps:

Step 1: The researcher runs linear regression to summarize the relationship between cognitive skills (dependent variable) and education (independent variable).

$H_0 : \beta = 0$ Accept null hypothesis if $\beta = 0$

$H_A : \beta \neq 0$ Reject null hypothesis if $\beta \neq 0$

SPSS program is used to obtain the linear equation and slope of the line.

Table 4.10: Summary of Relationship between Education and Cognitive Skills

Coefficients						
Model		Un standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	.895	.023		39.353	.000
	Education	.088	.026	.211	3.406	.001
Dependent Variable: Cognitive skills						

From the table above, the researcher determines the linear equation i.e. $y = 0.895 + 0.088X$ and slope of the line i.e. $\beta = 0.088$. Since $\beta \neq 0$ the researcher rejects the null hypothesis and claims that there is a 'semblance" of relationship between cognitive skills and education.

Step 2: The researcher further tests for the strength of the claimed relationship. The strength of the claimed relationship is determined by Pearson's correlation test which is given as:

$$r = b\frac{S_x}{S_y}$$

Where,

b = slope = 0.088

S_x = Standard deviation of independent variable (x) = 0.294

S_y = Standard deviation of dependent variable (y) = 0.122

$$r = 0.088 \times \left(\frac{0.294}{0.122} \right)$$

$$r = 0.211$$

The researcher claims that there is a positive correlation between cognitive skills and education. The researcher further tests the significance of the correlation.

Step 3: Test of significance

This research uses a standard of 95% confidence interval; therefore, the significance level is defined as 0.95. In order for the claimed relationship to be significant, $t_{obs} > t_{0.95}$ The test statistic is given as:

$$t_r = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

$$= \frac{0.211\sqrt{251-2}}{\sqrt{1-0.211^2}}$$

$$= \frac{0.211\sqrt{249}}{\sqrt{1-0.0445}}$$

$$= 3.40$$

From the above calculation, t_{obs} = 3.40 > $t_{0.95, df=249}$ = 1.65 (n = 251), therefore, the researcher concludes that the claimed relationship between cognitive skills and education is statistically significant at 95% confidence interval.

Step 4: Test of Type I error

The researcher conducts alpha test to determine whether or not a Type I error has occurred during the hypothesis test. A Type I error is the error that exists when the researcher rejects the null hypothesis even when it holds true.

The test hypothesis follows:

$$H_0 : \alpha_{obs} - \alpha < 0$$

$$H_A : \alpha_{obs} - \alpha > 0$$

$$\alpha_{obs} = (\bar{x} - 2S) - (\bar{x} - 2S) - 0.95$$

Where, S = standard deviation = 0.122

$\bar{x}$ = 0.968

$$\alpha_{obs} = \left| (\bar{x} + 2S) - (\bar{x} - 2S) - 0.95 \right|$$

$$\alpha_{obs} = (0.968 + 2 * 0.122) - (0.968 - 2 * 0.122) - 0.95$$

= 0.462

$$H_0 : \alpha_{obs} - \alpha < 0$$

$$H_A : \alpha_{obs} - \alpha > 0$$

$$\alpha_{obs} - \alpha = 0.462 - 0.05 = 0.412$$

Since, $\alpha_{obs} - \alpha = 0.412 > 0$ the researcher safely rejects the null hypothesis and accepts the alternative hypothesis. The researcher concludes that the claimed hypothesis holds true and Type I error has not occurred.

Hypothesis 2: Technical skills depend on education

H_0: Technical skills do not depend on education.

H_A: Technical skills depend on education.

Human capital theory stresses that individuals acquire productive skills in school therefore, people invest in education in order to be more productive (Becker, 1976). Technical skills are the main reason why education is rewarded in the labor market (Barone & Werfhorst, 2011). Credentialism theory explains that educational qualifications are used as a legitimized means for assessing the productivity and skills of employees (Collins, 1979). Some scholars perceive education as a positional good that indicates productivity in an indirect way. They argue that although education does not generate ready to use skills, it makes people more easily trainable at the work place, thereby reducing training cost (Thurow, 1975). It is assumed that the relationship between education (X) and technical skills (Y) may be summarized by simple linear regression equation in a form of $Y = a + bX + c$ where a = Y-intercept, b = slope and c = forecast error.

The researcher computes the hypothesis test in following 4 steps:

Step 1: The researcher runs linear regression to summarize the relationship between technical skills (dependent variable) and education (independent variable).

$H_0 : \beta = 0$ Accept null hypothesis if $\beta = 0$

$H_A : \beta \neq 0$ Reject null hypothesis if $\beta \neq 0$

SPSS program is used to obtain the linear equation and slope of the line.

Table 4.11: Summary of Relationship between Education and Technical Skills

Coefficients						
Model		Un standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.824	.029		28.529	.000
	Education	.145	.033	.270	4.430	.000
Dependent Variable: Technical skills						

From the table above, the researcher determines the linear equation i.e. $y = 0.824 + 0.145X$ and slope of the line i.e. $\beta = 0.145$. Since $\beta \neq 0$ the researcher rejects the null hypothesis and claims that there is a 'semblance" of relationship between technical skills and education.

Step 2: The researcher further tests for the strength of the claimed relationship by using Pearson's correlation test which is given as:

$$r = b\frac{S_x}{S_y}$$

Where,

b = slope = 0.145

S_x = Standard deviation of independent variable (x) = 0.294

S_y = Standard deviation of dependent variable (y) = 0.158

$$r = 0.145 \times \left(\frac{0.294}{0.158}\right)$$

$$r = 0.269$$

$$r = 0.27$$

The researcher claims that there is a positive correlation between technical skills and education. The researcher further tests the significance of the correlation.

Step 3: Test of significance

This research uses a standard of 95% confidence interval; therefore, the significance level is defined as 0.95. In order for the claimed relationship to be significant, $t_{obs} > t_{0.95}$ The test statistic is given as:

$$t_r = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

$$\frac{0.270\sqrt{251-2}}{\sqrt{1-0.270^2}}$$

$$= \frac{0.270\sqrt{249}}{\sqrt{1-0.0729}}$$

$$= \frac{0.270(15.779)}{0.962}$$

$$= 4.4248$$

From the above calculation, t_{obs} = 4.42 > $t_{0.95, df=249}$ = 1.65 (n = 251), therefore, the researcher concludes that the claimed relationship between technical skills and education is statistically significant at 95% confidence interval.

Step 4: Test of Type I error

The researcher conducts alpha test to determine whether or not Type I error has occurred during the hypothesis test.

The test hypothesis follows:

$$H_0 : \alpha_{obs} - \alpha < 0$$

$$H_A : \alpha_{obs} - \alpha > 0$$

$$\alpha_{obs} = (\bar{x} - 2S) - (\bar{x} - 2S) - 0.95$$

Where, S = standard deviation = 0.158

$\bar{x}$ = 0.944

$$\alpha_{obs} = \left| (\bar{x} + 2S) - (\bar{x} - 2S) - 0.95 \right|$$

$$\alpha_{obs} = (0.944 + 2 * 0.158) - (0.944 - 2 * 0.158) - 0.95$$

= 0.318

$$H_0 : \alpha_{obs} - \alpha < 0$$

$$H_A : \alpha_{obs} - \alpha > 0$$

$$\alpha_{obs} - \alpha = 0.318 - 0.05 = 0.268$$

Since, $\alpha_{obs} - \alpha = 0.268 > 0$ the researcher safely rejects the null hypothesis and accepts the alternative hypothesis. The researcher concludes that the claimed hypothesis holds true and Type I error has not occurred.

Hypothesis 3: Employment opportunity depend on skills

H_0 : Employment opportunity does not depend on skills

H_A : Employment opportunity depends on skills.

"Skills have become the global currency of the 21st century" (OECD, 2012). Without proper investment in skills, people languish on the margins of society, technological progress does not translate into economic growth, and countries can no longer compete in an increasingly knowledge-based global society (OECD, 2012). People with poor skills face a much greater risk of experiencing economic

disadvantage, and a higher likelihood of unemployment and dependency on social benefits (OECD, 2012).

Conversely, people equipped with skills have greater chances of employment opportunity and social benefits (ILO, 2008). Education, skills and vocational training are the central pillars of employability and economic prosperity (Id). It is assumed that the relationship between skills (X) and employment opportunity (Y) may be summarized by simple linear regression equation in a form of $Y = a + bX + c$ where a = Y-intercept, b = slope and c = forecast error.

The researcher computes the hypothesis test in following 4 steps:

Step 1: The researcher runs linear regression to summarize the relationship between employment opportunity (dependent variable) and skills (independent variable).

$H_0 : \beta = 0$ Accept null hypothesis if $\beta = 0$

$H_A : \beta \neq 0$ Reject null hypothesis if $\beta \neq 0$

SPSS program is used to obtain the linear equation and slope of the line.

Table 4.12: Summary of Relationship between Skills and Employment Opportunity

Coefficients						
		Un standardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.582	.063		9.264	.000
	Skills	.387	.065	.354	5.980	.000
a. Dependent Variable: Employment opportunity						

From the table above, the researcher determines the linear equation i.e. $y = 0.582 + 0.387X$ and slope of the line i.e. $\beta = 0.387$. Since $\beta \neq 0$ the researcher

rejects the null hypothesis and claims that there is a ‘semblance” of relationship between employment opportunity and skills.

Step 2: The researcher tests the strength of the claimed relationship by using Pearson’s correlation test which is given as:

$$r = b\frac{S_x}{S_y}$$

Where,

b = slope = 0.387

S_x = Standard deviation of independent variable (x) = 0.152

S_y = Standard deviation of dependent variable (y) = 0.166

$$r = 0.387 \times \left(\frac{0.152}{0.166}\right)$$

$$r = 0.354$$

The researcher claims that there is a positive correlation between skills and employment opportunity. The researcher further tests the significance of the correlation.

Step 3: Test of significance

This research uses a standard of 95% confidence interval; therefore, the significance level is defined as 0.95. In order for the claimed relationship to be significant, $t_{obs} > t_{0.95}$ The test statistic is given as:

$$t_r = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

$$= \frac{0.354\sqrt{251-2}}{\sqrt{1-0.354^2}}$$

$$= \frac{0.354\sqrt{249}}{\sqrt{1-0.125}}$$

$$= \frac{0.354(15.779)}{0.935}$$

$$= 5.97$$

From the above calculation, $t_{obs} = 5.97 > t_{0.95, df=249} = 1.65$ (n = 251), therefore, the researcher concludes that the claimed relationship between skills and employment opportunity is statistically significant at 95% confidence interval.

Step 4: Test of Type I error

The researcher conducts alpha test to determine whether or not a Type I error has occurred during the hypothesis test. The test hypothesis follows:

$$H_0 : \alpha_{obs} - \alpha < 0$$

$$H_A : \alpha_{obs} - \alpha > 0$$

$$\alpha_{obs} = (\bar{x} - 2S) - (\bar{x} - 2S) - 0.95$$

Where, S = standard deviation = 0.166

$\bar{x}$ = 0.952

$$\alpha_{obs} = (0.952 + 2 * 0.166) - (0.952 - 2 * 0.166) - 0.95$$

$$= 0.286$$

$$H_0 : \alpha_{obs} - \alpha < 0$$

$$H_A : \alpha_{obs} - \alpha > 0$$

$$\alpha_{obs} - \alpha = 0.286 - 0.05 = 0.236$$

Since, $\alpha_{obs} - \alpha = 0.236 > 0$ the researcher safely rejects the null hypothesis and accepts the alternative hypothesis. The researcher concludes that the claimed hypothesis holds true and Type I error has not occurred.

Hypothesis 4: University education system in ASEAN is diverse and therefore, lacks a common standard to verify the skills of graduates after implementation of AEC.

H_A: University education system in ASEAN is diverse and therefore, lacks a common standard to verify the skills of graduates after implementation of AEC

H_0: University education system in ASEAN is uniform and there is a common standard to verify the skills of graduate after implementation of AEC.

Credentialism theory suggests that educational qualifications (credentials) are used as a legitimized means to assess the skills and productivity of a graduate (Collins, 1979). With the introduction of regionalism the challenges for the higher education institutions go beyond the concept of globalization. The main concern is how higher education institutions and the national governments of the regional member countries can adjust themselves to cope with regionalized education.

The portability of qualifications in higher education is one of the major issues associated with such regional integrations (Hoosen et al., 2009). AEC poses similar challenge to the higher educational institutions in the ASEAN. The education system in the ASEAN countries is diverse; therefore, students involved in the intra - regional movement may face many problems in terms of cultural diversity, language and communication barrier, instructional practices and curriculum incomparability

(Iskandar, 2009). Each member country in ASEAN has developed through a unique historical path, and possess rich and diverse cultural portfolio. (Yavaprabhas, 2009) suggests that education system in ASEAN is diverse and lacks a common standard, therefore, with the implementation of AEC, it will be challenging for the labor market to assess the skills of the graduates.

It is assumed that the relationship between diversity in education system in ASEAN(X) and lack of standard of skill verification (Y) may be summarized by simple linear regression equation in a form of $Y = a + bX + c$ where a = Y-intercept, b = slope and c = forecast error.

The researcher computes the hypothesis test in following 4 steps:

Step 1: The researcher runs linear regression to summarize the relationship between lack of standard of skill verification (dependent variable) and diversity in education system in ASEAN (independent variable).

$H_0 : \beta = 0$ Accept null hypothesis if $\beta = 0$

$H_A : \beta \neq 0$ Reject null hypothesis if $\beta \neq 0$

SPSS program is used to obtain the linear equation and slope of the line.

Table 4.13: Summary of Relationship between Diverse Education System in ASEAN and Lack of Standard of Skill Verification

Coefficients						
Model		Un standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.393	.068		5.812	.000
	Diverse Education system in ASEAN	.521	.071	.419	7.30	.000
a. Dependent Variable: Lack of standard of skill verification						

From the table above, the researcher determines the linear equation i.e. $y = 0.393 + 0.521X$ and slope of the line i.e. $\beta = 0.521$. Since $\beta \neq 0$ the researcher rejects the null hypothesis and claims that there is a 'semblance" of relationship between diverse education system in ASEAN and lack of standard of skill verification.

Step 2: The researcher further tests the strength of the claimed relationship by using Pearson's correlation test which is given as:

$$r = b\frac{S_x}{S_y}$$

Where,

b = slope = 0.521

S_x = Standard deviation of independent variable (x) = 0.181

S_y = Standard deviation of dependent variable (y) = 0.224

$$r = 0.521 \times \left(\frac{0.181}{0.224} \right)$$

$$r = 0.420$$

The researcher claims that there is a positive correlation between diversity in education system in ASEAN and lack of standard of skill verification. The researcher further tests the significance of the correlation.

Step 3: Test of significance

This research uses a standard of 95% confidence interval; therefore, the significance level is defined as 0.95. In order for the claimed relationship to be significant, $t_{obs} > t_{0.95}$ The test statistic is given as:

$$t_r = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

$$= \frac{0.42\sqrt{251-2}}{\sqrt{1-0.42^2}}$$

$$= \frac{0.42\sqrt{249}}{\sqrt{1-0.176}}$$

$$= 7.30$$

From the above calculation, $t_{obs} = 7.30 > t_{0.95, df=249} = 1.65$ (n = 251), therefore, the researcher concludes that the claimed relationship between diversity in education system in ASEAN and lack of standard to verify the skills of graduate is statistically significant at 95% confidence interval.

Step 4: Test of Type I error

The researcher conducts alpha test to determine whether or not a Type I error has occurred during the hypothesis test. A Type I error is the error that exists when the researcher rejects the null hypothesis even when it holds true.

The test hypothesis follows:

$$H_0 : \alpha_{obs} - \alpha < 0$$

$$H_A : \alpha_{obs} - \alpha > 0$$

$$\alpha_{obs} = \left| \ (\bar{x} + 2S) - (\bar{x} - 2S) - 0.95 \ \right|$$

Where, S = standard deviation = 0.22

$\bar{x}$ = 0.87

$$\alpha_{obs} = (0.87 + 2 * 0.22) - (0.87 - 2 * 0.22) - 0.95$$

= 0.90

$$H_0 : \alpha_{obs} - \alpha < 0$$

$$H_A : \alpha_{obs} - \alpha > 0$$

$$\alpha_{obs} - \alpha = 0.90 - 0.05 = 0.85$$

Since, $\alpha_{obs} - \alpha = 0.85 > 0$ the researcher safely rejects the null hypothesis and accepts the alternative hypothesis. The researcher concludes that the claimed hypothesis holds true and Type I error has not occurred.

Hypothesis 5: Skill verification depend on professional certification examination

H_0 : Skill verification depend on professional certification examination

H_A : Skill verification does not depend on professional certification examination

Professional certification refers to an occupational designation that provides confirmation of an individual's competency in a specified profession or occupational specialty (Halligan, 2013). "Professional certification is a process in which a person proves that he or she has the knowledge, experience, and skills to perform a specific job. The proof comes in the form of a certificate earned by passing an exam that is accredited by an organization or association that monitors and upholds prescribed standards for the particular industry involved" (Peterson, 2013). Professional certification assures the employers, customers, and the public that the certificate holder is competent and professional in performing the specified job (Miller, 2014).

Professional certification provides a graduate better employment and advancement opportunities because it proves the graduate is well trained in the specific profession (Heathfield, 2014). Certification increases the credibility, marketability, and professional status of a graduate (Halligan, 2013). Moreover, the graduate possesses competitive advantage over other graduates without certification and is entitled to higher wages and benefits (Peterson, 2013).It is assumed that the relationship between professional certification (X) and skill verification (Y) may be summarized by simple linear regression equation in a form of $Y = a + bX + c$ where a = Y-intercept, b = slope and c = forecast error.

The researcher computes the hypothesis test in following 4 steps:

Step 1: The researcher runs linear regression to summarize the relationship between skill verification (dependent variable) and professional certification (independent variable).

$H_0 : \beta = 0$ Accept null hypothesis if $\beta = 0$

$H_A : \beta \neq 0$ Reject null hypothesis if $\beta \neq 0$

SPSS program is used to obtain the linear equation and slope of the line.

Table 4.14: Summary of Relationship between Professional Certification Examination and Verification of Skills

Coefficients						
Model		Un standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.661	.060		11.027	.000
	Professional Certification	.174	.070	.156	2.498	.013
a. Dependent Variable: Skill verification						

From the table above, the researcher determines the linear equation i.e. $y = 0.661 + 0.174X$ and slope of the line i.e. $\beta = 0.174$. Since $\beta \neq 0$ the researcher rejects the null hypothesis and claims that there is a 'semblance" of relationship between professional certification and skill verification.

Step 2: The researcher further tests for the strength of the claimed relationship. The strength of the claimed relationship is determined by Pearson's correlation test which is given as:

$$r = b\frac{S_x}{S_y}$$

Where,

b = slope = 0.174

S_x = Standard deviation of independent variable (x) = 0.247

S_y = Standard deviation of dependent variable (y) = 0.275

$$r = 0.174 \times \left(\frac{0.247}{0.275} \right)$$

$$r = 0.156$$

The researcher claims that there is a positive correlation between professional certification and skill verification. The researcher further tests the significance of the correlation.

Step 3: Test of significance

This research uses a standard of 95% confidence interval; therefore, the significance level is defined as 0.95. In order for the claimed relationship to be significant, $t_{obs} > t_{0.95}$ The test statistic is given as:

$$t_r = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

$$\frac{0.156\sqrt{251-2}}{\sqrt{1-0.156^2}}$$

$$= \frac{0.156 \times (15.779)}{0.987}$$

$$= 2.49$$

From the above calculation, t_{obs} = 2.49 > $t_{0.95, df=249}$ = 1.65 (n = 251), therefore, the researcher concludes that the claimed relationship between professional certification and skill verification is statistically significant at 95% confidence interval.

Step 4: Test of Type I error

The researcher conducts alpha test to determine whether or not a Type I error has occurred during the hypothesis test. The test hypothesis follows:

$H_0 : \alpha_{obs} - \alpha < 0$

$H_A : \alpha_{obs} - \alpha > 0$

$\alpha_{obs} = \left| \ (\bar{x} + 2S) - (\bar{x} - 2S) - 0.95 \ \right|$

Where, S = standard deviation = 0.275

$\bar{x}$ = 0.804

$\alpha_{obs} = (0.804 + 2 * 0.275) - (0.804 - 2 * 0.275) - 0.95$

= 0.15

$H_0 : \alpha_{obs} - \alpha < 0$

$H_A : \alpha_{obs} - \alpha > 0$

$\alpha_{obs} - \alpha = 0.15 - 0.05 = 0.10$

Since, $\alpha_{obs} - \alpha = 0.10 > 0$ the researcher safely rejects the null hypothesis and accepts the alternative hypothesis. The researcher concludes that the claimed hypothesis holds true and Type I error has not occurred.

4.4 Summary of Hypotheses Tests

H1: Cognitive skills depend on education

H2: Technical skills depend on education

H3: Employment opportunity depend on skills

H4: University education system in ASEAN is diverse and therefore, lacks a common standard to verify the skills of graduates after implementation of AEC

H5: Verification of skills depend on professional certification examination

Table 4.15: Summary of Hypothesis Tests

Items	H1	H2	H3	H4	H5
α	0.89	0.82	0.58	0.39	0.66
β	0.88	0.45	0.38	0.52	0.17
r	0.21	0.27	0.35	0.42	0.15
r^2	0.044	0.072	0.12	0.17	0.022
n	251	251	251	251	251
$r\left(\sqrt{n-2}\right)$	3.31	1.15	5.5	6.62	2.36
$1-r^2$	0.96	0.93	0.88	0.83	0.97
$\sqrt{1-r^2}$	0.98	0.96	0.93	0.91	0.98
t_r	3.4	4.42	5.97	7.30	2.49
$t_{0.95, df=249}$	1.65	1.65	1.65	1.65	1.65
Conclusion	Significant	Significant	Significant	Significant	Significant
Result	Accepted	Accepted	Accepted	Accepted	Accepted

4.5 Other Findings

The researcher further investigates whether university education system in the ASEAN is uniform or diverse. Ten features of education system were adopted to determine the uniformity in ASEAN education system. These features include:

1. Ministry of Education permit or license to operate;
2. Standard duration of 4 years for bachelor or undergraduate degree;

3. Establishment of University level;
4. Diploma awarded upon completion of 4 years required studies;
5. International certification of skills in the field of studies stated in the diploma by an internationally recognized body of examiner;
6. Entrance examination for admission to specific program;
7. Accreditation by an independent body that is internationally recognized;
8. Establishment of International college
9. Use of English language as a medium of instruction ; and
10. Political indoctrination.

The uniformity in the university education system in ASEAN is treated as a dependent factor and the 10 factors are treated as independent or explanatory factors.

$$X_i = \{X_1, X_2, X_3, X_4, ...X_{10}\}$$

Above mentioned ten features were tested statistically to determine whether the null hypothesis holds true. A score of 1.00 was assigned to the positive feature whereas a score of 0.00 was assigned to the negative features for each country. The scoring was based on secondary information collected from the Ministry of Education's website of each country and other trusted sources like UNICEF, CIA Fact book, BBC News, The Guardian. The score for each feature for each country is presented in tabular format as follows:

Table 4.16: Features of University Education System among ASEAN Counties

Countries	MOE	Dur.	Uni.	Dip.	Cert.	Ent. Ex.	Acc.	Inter. Coll.	Eng. Lang.	Indoc.	TTL
Brunei	1.00	1.00	1.00	1.00	-	1.00	-	1.00	1.00	-	7.00
Cambodia	1.00	1.00	1.00	1.00	-	-	-	-	-	-	4.00
Indonesia	1.00	1.00	1.00	1.00	-	-	-	-	-	-	4.00
Laos	1.00	-	1.00	1.00	-	-	-	-	-	1.00	4.00
Malaysia	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	1.00	-	8.00
Myanmar	1.00	-	1.00	1.00	-	1.00	-	-	-	-	4.00
Philippines	1.00	1.00	1.00	1.00	-	-	1.00	1.00	1.00	-	7.00
Singapore	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	9.00
Thailand	1.00	1.00	1.00	1.00	-	-	1.00	1.00	-	-	6.00
Vietnam	1.00	-	1.00	1.00	-	1.00	-	-	-	1.00	5.00
ASEAN Average Score											5.80
ASEAN Standard Deviation											1.87

The objective of the researcher is to prove that there is no uniformity in the university education system among the ASEAN member countries. Paired comparison study is introduced to determine whether there is uniformity or diversity in the university education system in ASEAN.

The researcher computes the ideal score for each country and compares the difference between the expected ideal score and the actual score of each country. The calculation follows:

$$\mu = t \times \left(\frac{s}{\sqrt{n}} \right) - \overline{X}$$

$$= 1.64 \times \left(\frac{1.87}{\sqrt{10}} \right) - 5.80$$

$$= 4.83$$

$$\sigma = \left(\frac{\overline{X} - \mu}{Z} \right) \times \sqrt{n}$$

$$= \left(\frac{5.80 - 4.83}{1.65} \right) \times \sqrt{10}$$

$$= 1.85$$

The researcher calculates the range of the ideal score as follows:

$\mu + 2\sigma$ = 4.83 + 2(1.85) = 8.55 (Maximum score)

$\mu - 2\sigma$ = 4.83 – 2(1.85) = 1.077 (Minimum score)

The researcher determines the ideal maximum score for each country as 8.55. Next, the researcher compares and shows the difference between the expected ideal score and the actual score of each country in the table below:

Table 4.17: Difference between Expected Ideal Score and Actual Score for each ASEAN Country

Countries	Ideal total score	Actual total score	Difference $\overline{d}$
Brunei	8.55	7.00	1.55
Cambodia	8.55	4.00	4.55
Indonesia	8.55	4.00	4.55
Laos	8.55	4.00	4.55
Malaysia	8.55	8.00	0.55

(Continued)

Table 4.17 (Continued): Difference between Expected Ideal Score and Actual Score for each ASEAN Country

Myanmar	8.55	4.00	4.55
Philippines	8.55	7.00	1.55
Singapore	8.55	9.00	-0.45
Thailand	8.55	6.00	2.55
Vietnam	8.55	5.00	3.55
Mean			2.75
Standard Dev			1.87

Hypothesis test is governed as:

H_0: There is uniformity in ASEAN education system. $\mu_d = 0$

H_A: There is no uniformity in ASEAN education system. $\mu_d \neq 0$

From the table above, $\mu_d = 2.75 > 0$ therefore, the researcher rejects the null hypothesis and accepts alternative hypothesis. The researcher conducts a test of significance. The test statistic follows:

$$t_0 = \frac{\bar{d}}{s_d / \sqrt{n}}$$

Accept $H_0 : t_{obs} < t_{0.95}$

Reject $H_0 : t_{obs} > t_{0.95}$

$$t_0 = \frac{2.75}{1.87 / \sqrt{10}}$$

$$t_0 = \frac{2.75}{1.87/3.16}$$

$$t_0 = 4.64$$

Since, $t_{obs} = 4.64 > 1.83$ $(t_{o.95, df=9} = 1.83)$ the researcher concludes that the result is significant and safely rejects the null hypothesis and accepts the alternative hypothesis. The researcher concludes that there is no uniformity in the ASEAN education system. The finding of this study is consistent with the previous studies. They state that education system in ASEAN is diverse and graduates being involved in intra regional movement after the implementation of AEC may face various challenges (Iskandar, 2009; Louangrath, 2013b; Yavaprabhas, 2009).

4.6 Personal Interview

The researcher conducted interviews with several business executives and professors from different companies and universities namely Mudman Company Limited, Golden Donuts Company Limited, Au Bon Pain Café, Golden Scoop Company Limited and Bangkok University. These interviews were conducted to understand their opinions about AEC and its effects on university education and the job market. Following open ended questions were asked to the business executives and professors.

1. The implementation of AEC will allow free movement of skilled labor force in the region. Skilled labor force including new graduates may move freely in the region. However, the education system among the ASEN countries is diverse. Will this affect the job market?

2. How can the job market assess the skill set of the graduates from different member countries?
3. Will the implementation of professional certification examination system help market assess the skill set of the graduates?

Below are the responses from business executives and professors:

Respondent 1

"After implementation of AEC, we expect movement of nationals from different ASEAN member countries into the region. Both skilled and unskilled labor forces could be a part of this movement. We are concerned with the movement of skilled labor force into the region as they are hoping to have jobs in our labor market. Currently, we offer no formal way of evaluating their skills other than through interviews and it will be difficult for us to accurately assess their skills as we are not familiar with the education system in their host countries. I agree that the university education system among ASEAN countries is different from one another and each country has its own curriculum and a system unique to their country. As such it will be very challenging for companies in the recruitment process. Therefore, the idea of implementing professional certification examination into the university curriculum will be of tremendous benefit. It is up to the company to hire a person who has passed or failed the test, but if a graduate walks in the interview with such a certificate that is accepted globally, it will be much easier for the recruiters to evaluate whether or not those candidate posses the required skills.

I personally believe that implementation of such an examination will be very helpful. Universities should integrate such tests into their curriculum. Actually,

western countries already have such tests. I was in UK a few years ago and applied for certain jobs. The companies required a certified license together with other skills, which could be obtained only by passing a standardized test. I strongly believe such a standardized test will help recruiting committees in the ASEAN region to assess the skills of potential job seekers that come from different academic background than ours".

Respondent 2

"Yes, I agree that education systems in the ASEAN countries are different from one another, and believe that this diversity in education system will pose challenges to the job market. After the implementation of AEC in 2015, I expect an influx of ASEAN nationals in Thailand. We (our company) are willing to hire foreign nationals, but the only problem I see is it will be difficult for us to assess the skills of fresh graduates from diverse academic backgrounds. Since the standards of education system of ASEAN countries are different from one another it will be challenging for us to evaluate the talent and knowledge of nationals coming from different countries. Singapore has the best education system in the region so we may not be very skeptic to hire Singaporeans; however, countries like Myanmar, Cambodia, and Indonesia are perceived to have a lower academic standard in comparison to Singapore, and we may have to think twice before we hire nationals from these countries.

It would be great if universities implemented a standardized examination into their curriculum. If a candidate from any member country walks in for an interview and aside from a university degree if he or she has a professional certification in a particular field that incorporates academic and practical knowledge of the subject

matter, it will provide support or evidence that he possesses the skills necessary in that particular field. I support this idea. It may be difficult to implement, but it can start with the networks of universities. I also believe it is a great way to assess the skills of these nationals in a fair manner without any preconception".

Respondent 3

"With the implementation free movement of skilled labor force in AEC, there needs to be a professional way of evaluating skill set, whether be a professional certification examination on particular field of study or solely based on experience gained in related field. It is inevitable that languages between countries will be different; the job market needs to centralize on a common language, such as English, to streamline this process".

Respondent 4

"After 2015, it will truly be very difficult to assess the qualitative and quantitative skills of potential job applicants with our current system. It will be challenging for employers to assess the skills of applicants from different ASEAN countries. With the idea that you have presented of professional certification examination, the dilemmas that the employers are going through while assessing the skills of candidates will become smaller. If we can successfully implement a system, an examination that is completely objective in the field that we are looking to fill in our companies, it will be easier for employers to assess the skills of graduates objectively. I also believe the examination should test graduates' practical knowledge

in the field along with theoretical knowledge, so the employers have a good basis to assess potential graduates".

Respondent 5

"Currently we lack a system that helps companies identify real talent in the graduate pool. With ASEAN in the making, this issue will become more burdensome because we will have people from all over the place looking to enter the job market. These people will come from various cultural, social, and educational backgrounds and for employers to identify the talent we are seeking; we have to integrate a system that will allow an objective evaluation along with the usual interviews. Professional examination will allow the graduates to distinguish themselves from others, in that; they will have an edge to prove their knowledge in the field without emotional biases. Some people are naturally good with interviews, but they might not possess enough knowledge of the subject matter. On the other hand some people are naturally brilliant and do not possess strong interview skills. A company may hire the former candidate over the latter because of a successful interview, while it is actually losing a very good candidate in its workforce. Therefore, a professional certification examination might actually provide the employers with a tool to accurately and fairly assess the skills of potential job applicants".

Respondent 6

"I am not sure if there is diversity in the university education system among the ASEAN countries. It is a very difficult question for any Thai person or even university staff to answer whether there is uniformity or diversity in the university

education system among ASEAN countries. In my opinion, education system does not affect the job market. Job market is created by companies and education system just provides students with knowledge or prepares them for the job market. Diversity in education system does not affect job market. In context to AEC and evaluation of skills of graduates from different countries, companies will evaluate candidates by looking at their experiences. In context to fresh graduates companies may accept candidates with professional certification and yes professional certification could be one of the standards to assess the skills of the graduates in the AEC".

4.7 Summary of Personal Interview

Most of the respondents agreed that the university education system among ASEAN countries is diverse. They also agreed that such diversity in the university education system could pose challenge to the job market after the implementation of AEC in 2015. They agreed that there is a lack of standard to verify the skills of the graduates because as there is no uniformity in the university education system in the ASEAN. Finally, they agreed that professional certification examination could serve as a standard to verify the skills of the graduates in the AEC market. However, some disagreed that there is diversity in the education system in the ASEAN education system. The summary of the responses are shown in the table below.

Table 4.18: Summary of the Interview Questions

Respondents	No. of questions	Agree	Disagree	Agreement Percentage
Respondent 1	3	3	0	100%
Respondent 2	3	3	0	100%
Respondent 3	3	3	0	100%
Respondent 4	3	3	0	100%
Respondent 5	3	3	0	100%
Respondent 6	3	1	2	33%
Average agreement percentage (%)				89%
Average disagreement percentage (%)				11%

Since, 89% of the response rate is in agreement and only 11% of the response rate is in partial disagreement, it is concluded the deviation caused by such disagreement is not significant.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Discussion

The analysis shows that education enables cognitive and technical skills as there is a positive correlation between education and cognitive skills and education and technical skills with t_r = 3.4 and t_r = 4.42 respectively, significant at 95% confidence interval. The result is consistent with previous researches that support the argument that education develops cognitive and technical skills. Early education or schooling develops cognitive skills in humans that allow them to learn new information, understand and interpret written materials, make logical decisions etc. Similarly, people develop technical skills, and know how through specialized education focused on the development of specific skills. For example, the study of medicine and surgery allows people to work as a doctor; study of law allows people to work as a lawyer, study of engineering allows people to work as an engineer. These are technical skills developed through the specific educational training for certain duration. Without proper technical education, these skills will develop in every other person.

These skills are the basis or the foundation that allows people to look for a job opportunity. The analysis shows that there is a positive correlation between skills and employment opportunity with t_r = 5.97 meaning that people with higher skills have greater chances of employment opportunity. So, education provides you with a skill that further leads you to employment. Therefore, it can be said that education is the

basis for job opportunity. There is a direct relationship between education, skills and employment.

With the implementation of AEC, graduates can move freely within the member countries. The education system of each member country is different from one another. Each country has its own national educational training requisites specified by their Ministry of Education. It has been analyzed under this study that such diversity in the education system poses challenge to the AEC market as non uniformity in the education system in ASEAN is positively correlated to the lack of standard of skill verification with t_r = 7.30, significant at 95% confidence interval. The analysis of this research is consistent with previous studies that support the statement that lack of uniform education system in ASEAN creates challenges in the AEC market as it will be difficult for the market to determine which graduate has employable skills. (Yavaprabhas, 2009) suggests that to cope with the challenges of AEC and its implication in education market, the governments of ASEAN countries should focus on harmonization of education system in the ASEAN.

Conversely, this study suggests that harmonization of education in the ASEAN is an impracticable idea. ASEAN comprises of ten nations and each country has developed through unique historical path, and possess rich and diverse cultural portfolio. Education is the inculcation of the national sentiment and cultural identity of a country into its youths. At the university level, the post secondary institution is charged with the duty to produce graduates with the ideals and skills fit for the advancement of its nation and economy. Moreover, education is rigged with national sentiment and is closely guarded by all state governments. For these reasons any attempt for harmonization of education in the AEC is a failed idea.

This study proposes an alternative to harmonization i.e. implementation of professional certification examination into the university curriculum. Under this policy, the universities in ASEAN will continue to follow their national educational training requisites as specified by each country's Ministry of Education, however, a common independent and internationally acceptable standard of skill verification will be established by the means of professional certification examination. It has been proved under this system that AEC market demands for verification of skills of the graduates. 91% of the respondents agree that AEC market demands for verification of skills and 80% of the respondents believe that professional certification examination system could be the means to verify the skills of the graduates in the AEC market. Moreover, the analysis shows that there is a positive correlation between professional certification examination and skill verification with $t_r = 2.49$, significant at 95% confidence interval.

Labor mobility among ten countries calls for a common standard that is acceptable to all member countries. Since, no country and no government will be willing to give up its national education system, and adopt a new system, the market dictates the standard. The market will dictate that the standard must be one ascertainable through internationally recognized professional designation by the means of standardized examination. Professional certification by independent and internationally recognized chartered professional associations will be the new standard in measuring and verifying the skills of the graduates. The verification of skills will depend on professional certification rather than university diploma in the AEC market.

5.2 Recommendation

University management must understand the nature of the development of education market after the implementation of AEC. The management must look beyond the licensure by the Ministry of Education; it must look towards implementation of professional certification examination meaning that the university management must gear their curriculum towards passing their graduates through the certification process. The certification attests to the skills of the graduates. These attested skills reflect upon the university as being a trusted institution to provide quality education. Certification serves as a supplemental assurance that whatever the assertion has been made in the diploma; is verified by an independent and internationally recognized body of the specified profession that the graduate truly possesses the skills of that profession. The certification gives the graduate a professional designation. In the AEC job market, it is the certification that differentiates a job applicant as being a value added applicant from other piles of applicants.

To date, Singapore is the only country in ASEAN that has systematically applied professional certification examination into its education curriculum. Singapore's education system is considered to be among the top education systems in the world. Singapore sees education as an engine of human capital to drive economic growth (OECD, 2010). The ability of the government to successfully match supply with demand of education and skills is one of the major sources of Singapore's competitive advantage. Singapore government believes that its manpower planning approach helps students to move faster into growing sectors, reduces oversupply in areas of declining demand more quickly, and targets public funds more efficiently for

post-secondary education. The ministry of education and the institutions of higher and post-secondary education then use these skill projections to inform their own education planning, especially for universities, polytechnics and technical institutes. Thus, these institutions train their students rigorously to produce graduates with certified professional skills as demanded (OECD, p. 172).

Currently, Myanmar and Vietnam are also taking a lead towards the direction of professional certification (Louangrath, 2013b). These countries understand that AEC market demands for a common ground and such commonality points towards one direction. And that direction is skill verification of graduates by the means of professional certification examination. The claim for quality education must be matched by the graduates passing the professional certification examination and successfully entering the job market. In the new market, the quality and value of the university depends on professional certification examination. The higher the passing rate of these examinations, the higher the rate of employment or market absorption among the graduates, and the more valuable and renowned the university will become.

To sum up, the university education system in ASEAN will be affected by the new market conditions. The path to success for Thai universities is to engage the market with a frontal assault by anticipating market demands and prepare themselves to meet that demand. The demand is one which calls for quality education. Education will no longer be a matter of input – process – output. The AEC market expects to see input – process – output impact through verifiable skills. Since there are ten countries in AEC, lacking a coherent policy of uniformity, quality is left to the dictate of the market. Whatever standards or quality claimed by universities must be verifiable by

an independent professional examination system. Universities that see this coming and prepare themselves in advance will enjoy the new market size and market share.

5.3 Conclusion

Education like other service industries, such as banking or hospitality is a business. It has its own market and market conditions. Universities are incorporated as non – profit organizations. Many people seem to misunderstand this legal structure of education industry with its nature of business. The production of university graduates constitutes to the social service. It is this element of the university's work that is considered nonprofit. Universities, finances like any normal business, deals with profit and loss, balance sheet, and cash flow statements. Revenue production is a concern for all university management team. Revenue depends on enrollment. Enrollment depends on quality. Quality depends on market absorption. Market absorption is the employability of graduates produced by the university. This linkage between revenue, enrollment, and quality and market absorption is very keen in the AEC 2015.

AEC is a common market comprised of ten countries. Each country has its own education system and no country is willing to give up its national education system for others. For that reason final arbiter is the market. Market mechanism is the key factor for success in the AEC's education market after 2015. Market mechanism demands the human resources of the new economy must possess employable skills. The diversity in the education system in the AEC means the lack of common standard to evaluate the skills of the graduates. In order to meet the demand of the new market, education in the AEC must find a common ground. This commonality will not come

from harmonization in the education system. In fact it will come from a market friendly system known as professional certification examination. A system that certifies the skills of the graduates by the means of internationally recognized examination system.

Success in the AEC education market requires a vehicle. That vehicle is the international college because only the international college has the curricula that are based on English language and the AEC market is a market based on English Language. The key curricula of the international college that will become the revenue produce for the university includes: accounting, finance, marketing and management. These majors are testable and certifiable by independent professional bodies that regulate these professions.

However, adopting a certification process is not enough. The adoption of the certification model means that the university must produce graduates that would pass the examination. Part of instruction is to prepare students to pass the professional certification examination. This is a market requirement. This requirement does not come from any state or government body. Universities that are unable and unwilling to supply graduates whose skills can be verifiable would be considered poor in quality and will soon be forced out of the market. Success in AEC education market is self reinforcing. Universities must realize that they are facing new operating conditions and this condition is dictated by the market. This market is unbiased and unemotional. A claim for quality education must be verifiable.

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APPENDIX

Survey Questionnaire in English

I	Personal Information		
1	Indicate your gender	Male	Female
2	Indicate your age	20 - 25 years	26 - 30 years
		31 - 35 years	More than 35 years
3	Indicate your occupation	Student	Professor / Faculty
		Employer	Employee
4	Name of the university / company		
5	Indicate your educational background	Bachelor's degree	Master's Degree
		PHD	

Please answer the following questions by selecting "agree" for positive answer and "disagree" for negative answer and "neutral" for neither agree nor disagree

II	Education and skills	Agree	Neutral	Disagree
6	Education enables people to develop cognitive skills.			
7	Education enables people to develop technical skills.			
8	A person with higher education background possesses higher skills			
9	A person with lower education background possesses lower skills			
10	There is a difference between skills and education			
11	Skills may be acquired from job experience (outside of classroom training)			
III	**Skills and employment**	**Agree**	**Neutral**	**Disagree**
12	Skills helps people to find employment			
13	A more skilled person has a better chance of getting a job than a less skilled person			

14	Employers hire employees by matching applicant's skills to company's required skills			
15	Getting job depends on referral rather than skills			
16	Employers look for evidence of applicant's ability for the job			
IV	**AEC and its effects**	**Agree**	**Neutral**	**Disagree**
17	AEC 2015 will allow free movement of skilled labor force in the region			
18	University education systems in ASEAN countries are different from one another.			
19	There is a lack of common standard to verify the skills of graduates from different member countries			
20	AEC market demands for verification of skills of the graduates			
V	**Verification of skills through Professional Certification Examination**	**Agree**	**Neutral**	**Disagree**
21	Skills can be verified by the means of professional certification examination system			
22	Professional certification examination is a standardized examination recognized internationally			
23	Professional certification verifies that a person has the knowledge, and skills to perform a specific job.			
24	The verification comes in the form of a certificate earned by passing a standardized exam that is accredited by an independent organization			
25	The certification examination is administered (issued) by each university attended by the student			
26	Passing the certification examination does NOT necessarily mean you have the skills			

Survey Questionnaire in Thai

I	**ข้อมูลส่วนตัวของผู้ตอบ**		
1	โปรดระบุเพศ	เพศชาย	เพศหญิง
2	ช่วงอายุ	20-25 ปี	26-30 ปี
		31-35 ปี	มากกว่า 35 ปีขึ้นไป
3	อาชีพ	นักเรียน/ นักศึกษา	อาจารย์
		นายจ้าง	ลูกจ้าง
4	ชื่อสถานที่ที่ท่านศึกษา หรือ ทำงานอยู่(กรุณาใส่ชื่อเป็นภาษาอังกฤษ)		
5	วุฒิการศึกษา	ระดับ ปริญญาตรี	ระดับ ปริญญาโท
		ระดับ ปริญญาเอก	

โปรดตอบคำถามโดยการทำเครื่องหมายในช่องที่ท่านเลือก

II	**การศึกษาและทักษะ**	**เห็นด้วย**	**เป็นกลาง**	**ไม่เห็นด้วย**
6	การศึกษา ช่วยให้คนพัฒนาทักษะความคิด			
7	การศึกษาช่วยให้คนพัฒนาทักษะทางเทคนิค			
8	ผู้ที่มีพื้นฐานการศึกษาสูง มักจะมีทักษะสูง			
9	ผู้ที่มีพื้นฐานการศึกษาน้อย มักจะมีทักษะน้อย			
10	"ทักษะ" และ "การศึกษา" แตกต่างกัน			
11	ทักษะอาจจะมาจากประสบการณ์การทำงาน (นอกห้องเรียน)			
III	**ทักษะและการจ้างงาน**	**เห็นด้วย**	**เป็นกลาง**	**ไม่เห็นด้วย**
12	ทักษะช่วยให้คนสามารถหางานได้			

13	คนที่มีทักษะสูงมีโอกาสในการทำงานมากกว่าคนที่มีทักษะน้อย			
14	นายจ้างเลือกจ้างพนักงานโดยการจับคู่ทักษะผู้สมัครงานให้ตรงกับทักษะจำเป็นที่บริษัทต้องการ			
15	ความสำเร็จในการสมัครงานขึ้นกับว่าใครแนะนำ และไม่ขึ้นกับความสามารถของผู้สมคร			
16	นายจ้างต้องการหลักฐานความสามารถของผู้สมัครงาน			
IV	**AEC และ ผลกระทบ**	**เห็นด้วย**	**เป็นกลาง**	**ไม่เห็นด้วย**
17	AEC 2015 จะช่วยให้แรงงานในส่วนภูมิภาคมีอิสระหางานในประเทศสมาชิก ASEAN มากขึ้น			
18	ระบบการศึกษาของแต่ละประเทศในระดับมหาวิทยาลัยในกลุ่ม ASEAN มีความแตกต่างกัน			
19	ไม่มีมาตรฐานโดยทุกประเทศยอมรับเพื่อวัดความสามารถของผู้สำเร็จการศึกษาจากมหาวิทยาลัยในกลุ่ม ASEAN			
20	ตลาด AEC ต้องการให้ผู้จบการศึกษาในระดับมหาวิทยาลัยมีใบรับรองประกอบวิชาชีพ			
V	**การรับรองทักษะโดยใบประกอบวิชาชีพ**	**เห็นด้วย**	**เป็นกลาง**	**ไม่เห็นด้วย**
21	ทักษะต่างๆสามารถรับรองได้โดยใช้ใบประกอบวิชาชีพ			
22	ใบประกอบวิชาชีพได้มาจากการสอบ โดยใช้ข้อสอบขององกรควบคุมวิชาชีพที่เป็นที่ยอมรับในระดับสากล			
23	ใบประกอบวิชาชีพยืนยันว่าบุคคลนั้นมีความรู้และทักษะในงานนั้นๆ			
24	ใบประกอบวิชาชีพได้มาจากการสอบที่ได้รับการรับรู้โดยองค์กรอิสระ			
25	มหาวิทยาลัยเป็ยผู้ออกข้อสอบวิชาชีพและใบประกอบวิชาชีพ			
26	การที่คุณมีใบประกอบวิชาชีพไม่ได้หมายความว่าคุณมีทักษะ			

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